AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 | 24

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0003	13-Sep-2004	W81G66-4141-2769	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
U. S. ARMY ENGINEER DISTRICT, CHICAGO 111 CANAL STREET CHICAGO IL 60606	W912P6	See Item 6	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
	X	9A. AMENDMENT OF SOLICITATION NO. W912P6-04-B-0003
	X	9B. DATED (SEE ITEM 11) 02-Aug-2004
		10A. MOD. OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 13)
CODE / FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer [X] is extended, [ ] is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS.
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

[ ] A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

[ ] B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

[ ] C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

[ ] D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

1. Under this Amendment No. 0003, the following areas of the Solicitation Package are amended, as delineated below:

   a. SPECIFICATIONS - See Part A of this Amendment
   b. SOLICITATION - See Part B of this Amendment

2. BY WAY OF THIS AMENDMENT, THE BID OPENING DATE IS EXTENDED TO 21 SEPTEMBER 2004. ALL BIDS AND ASSOCIATED AMENDMENTS MUST BE RECEIVED BY 21 SEPTEMBER 2004 AT 2:OO P.M. CHICAGO LOCAL TIME AT THE FOLLOWING LOCATION. (NOTE: BID PACKAGES SHALL BE SEALED, AND MARKED WITH THE DATE AND TIME OF OPENING, ALONG WITH THE SOLICITATION NUMBER AND THE NAME AND ADDRESS OF THE BIDDER):

U.S. Army Corps of Engineers, 111 North Canal Street, Suite 600, ATTN: Contracting Office, Chicago, Illinois 60606

----THE DESCRIPTION OF THIS AMENDMENT CONTINUES ON PAGE 2 ------

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) TEL: EMAIL:	
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)	16C. DATE SIGNED 13-Sep-2004

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

CONTINUED FROM BLOCK #14. DESCRIPTION OF AMENDMENT/MODIFICATION

3. This Amendment provides answers to contractor's questions that were submitted via e-mail and asked during the Pre-Bid Meeting held on 20 August 2004.

4. Point of Contact for this Amendment is Linda Zamarocy at (312) 846-5374.

SUMMARY OF CHANGES:

PART A - AMENDMENTS TO THE SPECIFICATIONS:

1. REMOVE AND REPLACE the following pages accordingly: **NOTES: 1)** An **asterisk (*)** denotes a revised portion of the Solicitation; asterisks have been placed at the beginning of the changed area and another one is shown at the end of the changed area. **2)** The replacement pages are marked with "AM-0003" beneath the page number.

a. At Section 00200, remove the following pages – 00200-1 through 00200-3 and replace with the attached revised pages 00200-1 through 00200-3. ADD new pages 00200-4 through 00200-7 and Appendix 00200-B.

b. At Section 01270, remove the following pages – 01270-3, 01270-4, and 01270-5 and replace with the attached revised pages 01270-3, 01270-4, and 01270-5.

c. At Section 01355, remove the following pages – 01355-1 through 01355-18 and replace with the attached revised pages 01355-1 through 01355-18.

d. At Section 01500, remove the following page – 01500-2 and replace with the attached revised page 01500-2.

e. At Section 02331, remove the following pages – 02331-11 through 02331-13 and replace with the attached revised pages 02311-11 through 02311-13.

f. At Section 02722, remove the following page - 02722-4 and replace with the attached revised page 02722-4.

PART B – AMENDMENTS TO THE SOLICITATION:

1. SECTION 00010 – Solicitation Contract Form (SF 1442), the required date/time has changed from 14 September 2004 at 0200 p.m. Chicago Local Time to 21 September 2004 at 0200 p.m. Chicago Local Time.

2. This Amendment adds two new Sub-Clins to the Bid Schedule; Item No.s 0001AN and 0003AL have been added. Accordingly, the Bid Schedule contained in Section 00010 (Solicitation Contract Form) is hereby replaced in its entirety with the attached Bid Schedule. (See pages 4 through 17 of this Amendment).

NOTE: CONTRACTORS MUST SUBMIT THEIR BIDS ON THE ATTACHED REVISED BID SCHEDULE.

Section 00010 - Solicitation Contract Form

THIS REVISED BID SCHEDULE REPLACES PAGES 3 THROUGH 17 OF THE SOLICITATION.

ITEM NO SUPPLIES/SERVICES
0001

BASE BID WORK
FIRM-FIXED PRICE (FFP)

THIS IS AN INFORMATIONAL ITEM ASSOCIATED WITH SUBLINE ITEMS 0001AA THROUGH 0001AN. THE CONTRACTOR SHALL SEPARATELY PRICE ITEMS 0001AA-0001AN.

The Contractor shall furnish all equipment, labor, materials, and incidentals to perform all operations necessary to accomplish the tasks/work for the BASE BID ITEMS.

The Work Location for Bid Items 0001AA-0001AN is STA 1+00 to 16+43.

(WORK AREAS ARE SHOWN ON DRAWING SHEET C-01, MARKED AS, "BASE BID")

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AA	**MOBILIZATION AND DEMOBILIZATION** FFP	1	Lump Sum		

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AB		1	Lump Sum		

TEMPORARY CONSTRUCTION FACILITIES
FFP

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AC		1	Lump Sum		

PERFORMANCE AND PAYMENT BONDS
FFP

Bonding for the Base Bid Items 0001AA through 0001AB, and 0001AD through 0001AN.

The bid price for this item shall be based on bonding for the Base Bid Items.

Payment will be made in accordance with Section 01270 of the Contract Specifications.

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AD		1	Lump Sum		

PROTECTION AND MAINTENANCE OF TRAFFIC
FFP

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AE		1	Lump Sum		

VEHICULAR AND EQUIPMENT DECONTAMINATION
FFP

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AF		1	Lump Sum		

CLEARING, GRUBBING, DEMOLITION AND PROTECTION
FFP

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AG		1	Lump Sum		

CONSTRUCTION EMISSION AIR MONITORING
FFP

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AH	**CLAY DIKE MATERIAL** FFP	95,500	Cubic Yard		
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AJ	**TOP SOIL** FFP	2,170	Cubic Yard		
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AK	**SEEDING** FFP	3.20	Acre		
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AL		2,330	Square Yard		

ACCESS ROAD ON DIKE
Geotextile
FFP

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AM		350	Net Ton (2,000 LB)		

ACCESS ROAD ON DIKE
Crushed Slag Aggregate
FFP

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AN		1,000	Net Ton (2,000 LB)		

UNSTABLE SUBGRADE
Crushed Slag Aggregate
FFP

NET AMT

TOTAL BID AMOUNT FOR ITEMS 0001AA-0001AN: $_____

ITEM NO SUPPLIES/SERVICES
0002
OPTION **DIKE CONSTRUCTION OPTIONAL BID ITEMS 0002AA-0002AL**

THIS OPTIONAL ITEM IS AN INFORMATIONAL ITEM ASSOCIATED WITH SUBLINE ITEMS 0002AA THROUGH 0002AL. THE CONTRACTOR SHALL SEPARATELY PRICE ITEMS 0002AA-0002AL.

The Contractor shall furnish all equipment, labor, materials, and incidentals to perform all operations necessary to accomplish the tasks/work for DIKE CONSTRUCTION OPTIONAL BID ITEMS 0002AA-0002AL.

The Work Location for Optional Bid Items 0002AA-0002AL is STA 25+27 to 39+43.

(WORK AREAS ARE SHOWN ON DRAWING SHEET C-01, MARKED AS, "OPTION 1")

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AA		1	Lump Sum		
OPTION	**PERFORMANCE AND PAYMENT BONDS** FFP				

Bonding for the DIKE CONSTRUCTION OPTIONAL BID ITEMS 0002AB through 0002AL.

The bid price for this item shall be based on bonding for DIKE CONSTRUCTION OPTIONAL BID ITEMS 0002AB-0002AL.

Payment will be made in accordance with Section 01270 of the Contract Specifications.

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AB		1	Lump Sum		
OPTION	**PROTECTION AND MAINTENANCE OF TRAFFIC** FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AC		1	Lump Sum		
OPTION	**VEHICULAR AND EQUIPMENT DECONTAMINATION** FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AD		1	Lump Sum		
OPTION	**CLEARING, GRUBBING, DEMOLITION AND PROTECTION** FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AE		1	Lump Sum		
OPTION	**CONSTRUCTION EMISSION AIR MONITORING** FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AF		83,750	Cubic Yard		
OPTION	**CLAY DIKE MATERIAL** FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AG		1,990	Cubic Yard		
OPTION	**TOP SOIL** FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AH		2.93	Acre		
OPTION	**SEEDING** FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AJ		2,330	Square Yard		
OPTION	**ACCESS ROAD ON DIKE** Geotextile FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AK		320	Net Ton (2,000 LB)		
OPTION	**ACCESS ROAD ON DIKE** Crushed Slag Aggregate FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AL		4,350	Net Ton (2,000 LB)		
OPTION	**UNSTABLE SUBGRADE** Crushed Slag Aggregate FFP				

NET AMT

TOTAL BID AMOUNT FOR ITEMS 0002AA-0002AL: $_____

ITEM NO	SUPPLIES/SERVICES
0003	
OPTION	**DIKE CONSTRUCTION OPTIONAL BID ITEMS 0003AA-0003AL** FFP

THIS OPTIONAL ITEM IS AN INFORMATIONAL ITEM ASSOCIATED WITH SUBLINE ITEMS 0003AA THROUGH 0003AL. THE CONTRACTOR SHALL SEPARATELY PRICE ITEMS 0003AA-0003AL.

The Contractor shall furnish all equipment, labor, materials, and incidentals to perform all operations necessary to accomplish the tasks/work for DIKE CONSTRUCTION OPTIONAL BID ITEMS 0003AA-0003AL.

The Work Location for Optional Bid Items 0003AA-0003AL is STA 16+00 to 25+70.

(WORK AREAS ARE SHOWN ON DRAWING SHEET C-01, MARKED AS, "OPTION 2")

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AA		1	Lump Sum		
OPTION	**PERFORMANCE AND PAYMENT BONDS** FFP				

Bonding for the DIKE CONSTRUCTION OPTIONAL BID ITEMS 0003AB through 0003AL.

The bid price for this item shall be based on bonding for DIKE CONSTRUCTION OPTIONAL BID ITEMS 0003AB-0003AL.

Payment will be made in accordance with Section 01270 of the Contract Specifications.

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AB		1	Lump Sum		
OPTION	**PROTECTION AND MAINTENANCE OF TRAFFIC** FFP				

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AC		1	Lump Sum		
OPTION	**VEHICULAR AND EQUIPMENT DECONTAMINATION** FFP				

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AD		1	Lump Sum		
OPTION	**CLEARING, GRUBBING, DEMOLITION AND PROTECTION** FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AE		1	Lump Sum		
OPTION	**CONSTRUCTION EMISSION AIR MONITORING** FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AF		59,890	Cubic Yard		
OPTION	**CLAY DIKE MATERIAL** FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AG		1,400	Cubic Yard		
OPTION	**TOP SOIL** FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AH		2.07	Acre		
OPTION	**SEEDING** FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AJ		1,510	Square Yard		
OPTION	**ACCESS ROAD ON DIKE** Geotextile FFP				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AK		230	Net Ton (2,000 LB)		
OPTION	**ACCESS ROAD ON DIKE** Crushed Slag Aggregate FFP				

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AL		1,000	Net Ton (2,000 LB)		
	UNSTABLE SUBGRADE Crushed Slag Aggregate FFP				

NET AMT

TOTAL BID AMOUNT FOR ITEMS 0003AA-0003AL: $_____

GRAND TOTAL BID AMOUNT FOR ITEMS 0001AA-0003AL: $_____

****

BID SCHEDULE NOTES:

1. BID CONDITIONS:

a. The above Bid Schedule contains a SCHEDULE FOR BASE BID AND OPTIONAL BID ITEMS.

b. The bidder's total price for the work shall be based on the TOTAL of the BASE BID ITEMS and OPTIONAL BID ITEMS. The Government intends to immediately award the BASE BID ITEMS. At the option of the Government, the OPTIONAL BID ITEMS may be awarded at the bid prices stated in the Bid Schedule within 200 calendar days after the notice to proceed for the BASE BID ITEM'S work. The Government does not guarantee any work beyond that of the BASE BID ITEMS.

c. The number of construction days to be added if Optional Bid Items 1 or Optional Bid Items 1 and 2 work are exercised is 35 calendar days. The required completion date of the Base Bid Items shall not be affected if the OPTIONAL BID ITEMS are not exercised.

d. Bidders are cautioned that they are required to complete the entire Bid Schedule, Base Bid Items and Optional Bid Items, and any bidder who does not complete the entire Bid Schedule will be considered non-responsive and ineligible for award.

2. SMALL BUSINESS SUBCONTRACTING PLAN: Prior to the Contracting Officer awarding the contract, the successful bidder will be required to submit a Small Business Subcontracting Plan in accordance with the provision of FAR Clause 52.219-9, "Small Business Subcontracting Plan." This requirement applies to all business concerns other than small businesses. The Contracting Officer must approve the Plan before an award can be made; the Plan will be made apart of the resultant contract.

The successful bidder in good faith will be required to apply the following percentages to its intended amount of subcontracts in order to satisfy the Small Business Subcontracting goals of the Chicago District. The District Goals are identified below:

(1) at least 57.2% with small businesses (SB)
(2) at least 10% with small disadvantaged businesses (SDB)
(3) at least 10% with women-owned SB (WOSB)
(4) at least 3% with service-disabled veteran-owned SB
(5) at least 3% with HUBZone SB.

3. *SUBMISSION OF BIDS*: BIDS RECEIVED BY FACSIMILE OR TELETYPE WILL NOT BE CONSIDERED.

QUESTIONS AND ANSWERS

Q1. Will decontamination be required for trucks delivering clay and leaving the site?

ANSWER: An amendment (Amendment-0003) to Specification 01355 states that "Decontamination during the construction phase of this project is defined to mean removing all visible soil or residues from vehicles or personnel using brushing, pressure washing with water, steam cleaning, or some other procedures approved by the Contracting Officer's Representative. The Contractor shall ensure that the vehicle decontamination process is sufficient to remove all visible soil from the vehicle tires, undercarriages, or frames and to keep the public road surfaces free of site soils or foreign materials. The Contractor Officer's Representative shall be the final judge of whether the decontamination procedure is successful in achieving these criteria. Cleaning solvents shall not be used without the prior approval of the Contracting Officer's Representative."

Q2. Is HazMat training for employees a job requirement?

ANSWER: Protective Measures for chemical exposure and all other hazards expected while performing work are to be addressed in the Accident Prevention Plan and Activity Hazard Analysis. Prior to the start of any work under the contract, the contractor is required to prepare and submit to the Government for approval an Accident Prevention Plan and Activity Hazard Analysis. The contractor shall be required to provide any and all training needed to protect workers from site hazards including, but not limited to, potential chemical exposures in accordance with the Accident Prevention Plan and Activity Hazard Analysis. Also, note all work in the contract must comply with EM 385-1-1, and safety and health training shall be in accordance with EM 385-1-1 and accepted Accident Prevention Plan.

Q3. Will the haul road in the center of the parcel remain in place on completion?

ANSWER: This haul road, except the portion under the dike will remain in place. The portion of the haul road under the dike is addressed in Amendment-0003 specification paragraph 02331-3.8, PREPARATION OF FOUNDATION AND PARTIAL FILL SURFACES.

Q4. Is a Certified Industrial Hygienist a project requirement? (on a daily basis?)

ANSWER: Where applicable, a Certified Industrial Hygienist shall be required to execute sampling programs and/or perform sample analyses as directed by the Accident Prevention Plan and Activity Hazard Analysis.

Q5. Decontamination Pad. The specifications describe the Contractor Installing a Decontamination Pad.

a. Please describe the requirements of the decontamination pad.

ANSWER: An amendment (Amendment-0003) to Specification 01355 states that the Contractor shall submit as part of the Environmental Protection Plan, a Decontamination Plan, which shall also describe the number and placement of decontamination or rinse stations, equipment, and methods used to decontaminate or rinse equipment and vehicles.

b. Is the intent of the decontamination pad to eliminate general construction dust and dirt from entering nearby roads, or is the intent to eliminate site specific chemical contaminants fro public exposure?

ANSWER: The intent of the decontamination pad is to eliminate the possibility of the public being subjected to contaminated soil that is transferred from construction vehicles onto public roads.

c. If trucks stay on the existing and new temporary roads and their wheels are clean, will they still need to pass through a decontamination area?

ANSWER: If the trucks stay on the existing and new temporary roads and their wheels are visibly clean of mud and dirt then they may not need to pass over an equipment rinse pad.

d. Will the requirements of the decontamination pad be required for all vehicles, delivery trucks, contractor employee vehicles, etc.?

ANSWER: Depending on how the work zones are set up by the Contractor, it is possible that there may be area(s) set aside that would not require decontamination prior to leaving the site. An example of this would be an employee vehicle parking area near the entrance to the site. Any work vehicle that has visible mud or dirt attached to the underside of the vehicle or on its wheels will require rinsing prior to leaving the site.

Q6. Safety – Exposure Limits. The specifications state that this project does not require 40-Hour Hazardous Waste operations training from employees that will be onsite, however it states that is the Contractor's responsibility to protect its workers from unacceptable chemical exposures.

a. Does the USACE anticipate chemical exposure limits that are above applicable PEL or TLV for workers under this contract?

ANSWER: The site has open Resource Conservation and Recovery Act (RCRA) status. See Section 00200 of the solicitation for more information on site contaminants. The Accident Prevention Plan and Activity Hazard Analysis should anticipate possible chemical exposures and describe the means of mitigating any such exposures.

b. During what activity, if any, should the contractor anticipate conditions that may exceed PEL for workers?

ANSWER: Answer same as for 6(a) above.

c. If after conducting the Initial Accident Prevention Plan and Activity Hazard Analysis it is determined that 40-hour training is required, or worker protection levels need to be increased to levels A – D, how will the additional costs, lack of productivity, etc. be handled by the USACE?

ANSWER: Bidders are expected to develop an Accident Prevention Plan and Activity Hazard Analysis using specification section 00200, the scope of work, their sound industrial hygiene judgment, and the USACE HTRW guideline that the 40-hour training requirement of HAZWOPER (29 CFR 1910.120 & 1926.65) applies only when there is a reasonable possibility for exposure during cleanup activities. HAZWOPER does not apply solely based on a site's status as an open RCRA site, but is to be applied based on the activities occurring at the site. The contractor is required to ensure worker safety, but RCRA status does not directly determine whether workers will or won't be exposed to hazardous material. For this project, the lack of a contract clause specifically requiring HAZWOPER training for on-site workers reflects the fact that the project is not a clean-up action but it also does not relieve the contractor of responsibility for the safety of on-site workers, including the 40-hour training requirement.

Q7. Existing Site Contamination Co

a. Is the existing site currently capped with a clay liner, separating the contamination from the surface?

ANSWER: The existing site is not currently capped with a clay liner separating the contamination from the surface.

b. If so, how thick is this cap?
ANSWER: There is no cap.

c. At what elevation (or in feet below surface) should the Contractor anticipate contamination?

ANSWER: In the late 1980s, all buildings and above ground structures were razed in response to a court order. Several inches of clean topsoil were graded to cover the site. Groundwater and free product levels have been encountered in the site monitoring wells at depths of less than one (1) foot below the existing ground surface. Groundwater level elevations and free product thickness data are provided in Section 00320.

Q8. Option #2 – Rail Road Tracks. Option #2 requires the demolition of the rail road track.

Are all the materials to be disposed of onsite at the demolition and debris stockpile areas?

Response: Yes.

Q9. Option #2 – Rail Road Tracks. If Option #2 is not exercised by the USACE:

a. Please describe the frequency of rail traffic through the site.

ANSWER: There has been no through rail traffic on the spur for at least 4 years. Based on conversations with industries adjacent to the spur, there is no expectation that the spur will be utilized for through traffic. Some rolling stock has been stored on the spur and moved about periodically (perhaps once every three months).

b. Will the Contractor be required to obtain any special insurances, railroad protective liability, etc.?

ANSWER: No.

Q10. There was a question at the site visit on Friday, August 20, 2004, of who would be responsible to pipe in usable water. It was suggested that in might be under a different contract. Can you please verify?

ANSWER: See specification paragraph 01500-1.3.2 Telephone, Water and Electricity.

Q11. After reading the specs I am still unclear on what kind of decontamination facilities are required. Will a concrete containment pad be required?

ANSWER: An amendment (Amendment-0003) to Specification 01355 states that the Contractor shall submit as part of the Environmental Protection Plan, a Decontamination Plan, which shall also describe the number and placement of decontamination or rinse stations, equipment, and methods used to decontaminate or rinse equipment and vehicles.

Q12. Must the water be contained and collected? The last contractor who worked on site most recently discharged his wash water to ground.

ANSWER: The decon water that is collected may be discharged back into the ground onsite. Due to the groundwater level being close to the ground surface it will be important that the Contractor not discharge the decon water in a way that will create ponding onsite.

Q13. If discharge water must be collected, how will it be stored and disposed?

ANSWER: Answer same as for 12 above.

Q14. The specification states that final pay quantities will be established by using an independent surveyor. Who will pay for these services?

ANSWER: Cost of surveys is considered incidental to dike construction as stated in Amendment-0003, specification paragraph, 01270-1.2.1, CLAY DIKE MATERIAL.

Q15. What is the intent of the unstable subgrade pay item? Is it to establish additional roadways on the site?

ANSWER: The unstable subgrade pay item is for the crushed slag aggregate beneath the dike. The slag for the access road on top of the dike is a separate pay item.

Q16. Section 01355 – Environmental Protection, Section f, page 01355-8, first paragraph states "The decontamination pad shall be constructed in a manner that will allow collection of the wash water for subsequent disposal at a remote on-site location, as described in the paragraph entitled "Land Application for Discharge Water",…

The same section 01355, paragraph 3.5.5 -Waste Water, page 01355-16 states "a. Waste water from construction activities, such as waste water generated by the decontamination of vehicle, etc., shall not be allowed to enter waterways. The contractor shall dispose of the construction related waste water off Government property in accordance with all Federal, State, Regional and Local Laws and regulations.

Question: Can water used to decontaminate vehicles be disposed of on-site or is offsite disposal required?

ANSWER: Decon water can be disposed of onsite.

Q17. What are the requirements for the construction of the decontamination pad? Can the pad be constructed of a clean 3" stone place on top of a liner or does the pad need to be constructed of concrete?

ANSWER: An amendment (Amendment-0003) to Specification 01355 states that the Contractor shall submit as part of the Environmental Protection Plan, a Decontamination Plan, which shall also describe the number and placement of decontamination or rinse stations, equipment, and methods used to decontaminate or rinse equipment and vehicles.

Q18. If trucks delivering clay stay on the existing slag haul roads or new slag haul roads constructed by the contractor and dirt does not accumulate on the truck tires will decontamination on the trucks when leaving the site is required?

ANSWER: If the trucks stay on the existing and new temporary roads and their wheels are visibly clean of mud and dirt then they may not need to pass over an equipment rinse pad.

Q19. If excessive settlement of the berm fill occurs do to the soft nature of the existing underlying soil and additional borrow is required, how will the contractor be paid for this additional embankment?

ANSWER: The foundation soils are medium dense to dense slag fill and sand and as such excessive settlement is not anticipated.

Q20. Is dewatering is required during dike construction can the water be pumped to and on-site location for disposal?

ANSWER: If dewatering is required during dike construction and the water contained oil then the water would then need to pass through an oil/water separator prior to onsite disposal. For this contract, we do not anticipate any need for dewatering.

Q21. Is water available on-site for dust control and decontamination operations? If not where can the contractor obtain water? Where did the slurry wall contractor obtain his water?

ANSWER: There is no water on-site for dust control and decontamination operations. The Contractor will be responsible for bringing water on-site as needed for the operations. The Contractor is responsible for identifying and selecting the water source and providing the means for transferring the water onto the site. See specification paragraph 01500-1.3.2 Telephone, Water and Electricity The slurry wall contractor obtained water from the local municipal water supply, from a pipeline that runs along the east side of Indianapolis Blvd.

Q22. Section 3.11 Compaction and Sealing, subsection 3.11.1 Compaction Equipment paragraph b. pages 02331-4 and 02331-15 describes the requirements of a self-propelled compactor to be used to compact the dike fill. We plan on using a standard Caterpillar 825 soil compactor. Will this machine meet your specifications?

ANSWER: Bidders should check with the manufacturer if they are not sure if their equipment conforms to the specification.

Q23. Several items required in the Construction Plan (Specification Section 01355, Part 1.7.2 e) are items That are part of the project design and should not need to be recreated. Will the ACOE make this information available to the Contractor? Items of particular interest include:

A. Drainage Plan (Specification Section 01355, Part 1.7.2 e.6).

B. B. Storm Water Pollution Prevention Plan (Section 01355, Part 1.7.2 e.7).
C. Post Construction Storm Water Pollution Prevention Plan (Section 01355, Part 1.7.2 e.8).

ANSWER: These plans need to be created specifically, by the Contractor, for each construction project in order to obtain the Rule 5 NPDES Stormwater Permit. The ACOE will not supply this information to the Contractor.

Q24. Does the in-place clay hydraulic conductivity testing requirement of one per lift (Specification Section 02331 Part 3.12.4, Table 2) apply to the Base Bid, Option 1 and Option 2 separately or in aggregate? For example if the requirement applies to each bid item separately the testing frequency corresponds to approximately one test for every 1,900 cubic yards of soil placed. If it applies to all three items (assuming all three are awarded), in aggregate the sampling frequency corresponds to once every 5,500 cubic yards which is approximately equal to the one test for every 5,000 cubic yards required in the borrow soil testing specification.

ANSWER: The testing requirements apply to each bid item separately.

Q25. The Specifications require that the embankment clay have a Unified Soil Classification System classification of CL. If the borrow material meets the hydraulic conductivity requirement of $1X10^{-7}$ cm/sec but does not classify as a CL will the material still be acceptable.

ANSWER: The material must classify as a CL.

Q26. Page 02331-10, Section 3.4.2 "Slopes and Surcharges", sentence 4 states "The maximum equipment or surcharge load permitted on the dike shall not exceed 300 pounds per square foot (psf)." Is this in reference to

building the dike embankment or to materials placed along side an excavation. Normal landfill clay liner specifications call for machines not to exceed 5 pounds per square inch (psi) which equals 720 pounds per square foot (psf). We use wide track D6 dozers to meet this requirement. The 300 psf requirement would require extremely small equipment to constructed the berm, is this what the Corp requires? Will semi tractor trailers be permitted to dump on the berm foot print or will clay need to be stockpiled and rehandled with smaller equipment? Will a Cat 815 or 825 compactor be allowed on the dike to compact the fill?

ANSWER: Specification paragraph 02331-3.4.2, Slopes and Surcharges, is revised in Amendment-0003.

Q27. Page 01500-2, Section 1.5.4 Haul Roads the last sentence of the paragraph reads' "haul road constructed during the contract duration shall be removed after work is completed and the impacted area restored to its preconstruction conditions". If the contractor builds new or widens the existing haul roads with slag materials will he be required to remove the haul roads and dispose off-site of the materials. I am concerned that the material may become contaminated and off-site disposal will be very costly, can the haul roads be left in-place or disposed of on-site? Also, if excess clay remains in the stockpile area after the dike is completed can this clay be left on site? What needs to be done to restore the haul road areas and clay stockpile areas? Do these areas need receive topsoil and seeding?

ANSWER: See Spec paragraph 01500-1.5.4, Haul Roads, of Amendment-0003 regarding question on disposition of haul roads and haul road materials constructed by the contractor. Also, see Spec paragraphs 02331-2.7, DIKE MATERIAL STOCKPILES, and 02331-3.6, STOCKPILES, of Amendment-0003 regarding question on excess clay material in stockpile areas and restoration of stockpile areas.

SECTION 00200

INFORMATION AVAILABLE TO BIDDERS

PART 1 GENERAL

The material presented in this section is intended to provide the Contractor with a historical background of the site. Although a number of sampling events have occurred at the ECI site, all hazards potentially present at the site may not have been characterized. The following paragraphs are a summary of information; the Contractor is encouraged to review the Additional Information Available in Paragraph 1.8.

1.1 SITE CONDITIONS AND ENVIRONMENTAL HISTORY

* 1.1.1 Information from Previous Site Investigations

Several consulting firms have performed investigations at the ECI site. Previous investigations included parcels bordering the one sited for this project. Only the information relevant to the project parcel, termed the main refinery, will be discussed here. This section covers the general site history and environmental considerations. *

1.2 SITE HISTORY

1.2.1 Refinery Operation

The "ECI property" was the location of a petroleum products refinery from 1918 to 1981. Peak production was approximately 140,000 barrels per day. The project parcel, termed the main refinery, contained the principal production area and also included storage, a marine loading area, rail loading areas, insecticide manufacturing, truck docking facilities, and an American Petroleum Institute (API) separator. The refinery operations included the production of mineral spirits, propane, leaded and unleaded gasoline, fuel oil, kerosene, asphalt and asphalt products, liquefied petroleum gas, grease, lubricating oils, paraffin wax, phenols, and sulfur. Between 1940 and 1958, pyrethrum extract, consisting of dried heads of certain varieties of chrysanthemums, was filtered on site. The filtered extract was combined with kerosene, used an insecticide base, to produce an insecticide. The maximum annual production of insecticide base occurred in 1944 when 49,359 barrels were produced. This accounted for 0.26 percent of the total plant throughout.

1.2.2 After Plant Closed

Former owners of the project site include Sinclair from 1918 to 1968, Atlantic Richfield Company (ARCO) from 1968 to 1976, and Energy Cooperative, Incorporated (ECI) from 1976 to 1981. In 1981, ECI filed for bankruptcy, and in the late 1980s, all buildings and above ground structures were razed in response to a court order. Several inches of clean topsoil were graded to cover the site. In 1989, the City of East Chicago became the owner of the site as payment for back taxes owed by ECI. The site has open Resource Conservation and Recovery Act (RCRA) status because the court-approved closure of the facility was not comparable to a RCRA approved closure. In addition, the site requires RCRA corrective action, due to the contamination of soil and groundwater on site from past

industrial activities.

1.2.3 Hydrocarbon Layer

A hydrocarbon layer has been intermittently encountered during groundwater monitoring activities since the beginning of the site investigations in 1991. In 1991, oil was discovered to be seeping into the canal. An oil recovery system was installed along the north bank of the canal (the south edge of the main refinery parcel), and has been in operation since August 1992. The system consists of several recovery wells, an oil/water separator system, a product storage area, and an infiltration trench for the water. Geraghty & Miller, Inc. was retained by ARCO to operate and maintain the oil recovery system and to gage the existing wells on a quarterly basis. In addition to the oil recovery system, an oil boom is maintained in the canal to control any continued seepage. Since the tentative merger of ARCO and BP Amoco, the oil recovery system has been maintained by ARCO, referred to as BP Amoco/ARCO in this contract, or their consultant.

* 1.3 GROUNDWATER SAMPLING RESULTS

Several groundwater sampling events have occurred at the ECI site. Wells located on the main refinery parcel were sampled in 1991, 1993 through 1994, and 1995. Sampling events were conducted by different contractors, and different parameters were measured during the sampling events. The results from each sampling event are summarized below. Complete reports on sampling activities may not be available for Contractor review; information that is available for review is listed in Paragraph 1.6.

Groundwater samples collected in June and November of 1991 were analyzed for volatiles, semi-volatiles, dissolved and total metals. Pesticides and polychlorinated biphenyls (PCBs) were also analyzed in the November, 1991 sampling event. The highest concentration of volatiles was detected in monitoring well MW-32 at the north end of the site; this well also contained free product. The highest concentration of pesticides was also found in monitoring well MW-32. The only PCB detected was Aroclor 1254, which was found in a concentration of 0.004 mg/L in monitoring well MW-27. The range of detected contaminants is summarized in Table 1.

Table 1: Groundwater Sampling and Analysis Results from 1991.

Compound	Range
Benzene	0.02 - 57 mg/L
Chlorobenzene	0.002 - 0.02 mg/L
Chloroform	ND - 0.04 mg/L
1,2-dichloroethane	ND - 0.06 mg/L
a chlordane	0.01 - 1.2 µg/L (estimated)[1]
g chlordane	0.0064 - 3.3 µg/L (estimated)
Endrine	0.013 - 0.06 µg/L (estimated)
Heptachlor	0.013 - 0.055 (estimated)
Heptachlor epoxide	0.0085 - 1.6 µg/L (estimated)
Methoxychlor	0.025 - 0.32 µg/L (estimated)
Arsenic	0.004 - 0.1 mg/L (estimated)
Barium	0.09 - 1.5 mg/L
Chromium	0.007 - 0.2 mg/L (estimated)
Lead	0.01 - 2 mg/L (estimated)
Mercury	0.0005 - 0.004 mg/L (estimated)
Aroclor 1254	0.004 mg/L
Pesticides	15.2 µg/L (estimated)

[1]The concentration ranges followed by the notation "estimated" means the laboratory provided a quantitative estimate.

[2]Compounds not listed were not found in detectable concentrations.

Groundwater samples were collected from the four recovery wells along the north bank of the canal in 1993 and 1994. The samples were collected quarterly and analyzed for metals and volatiles. This water was being injected into the subsurface through a re-infiltration trench on site. Table 2 gives a summary of the results.

Table 2: Groundwater Sampling and Analysis Results from 1993-1994.

Compound	Range
Arsenic	ND - 0.06 mg/L
Lead	ND - 0.02 mg/L
Acetone	ND - 0.05 mg/L
Benzene	ND - 0.25 mg/L
Ethylbenzene	ND - 0.03 mg/L
Methyl tert butyl ether	ND - 0.43 mg/L
Total Xylene	ND - 0.15 mg/L

In 1995, groundwater samples were taken from four existing wells and four new wells by Patrick Engineering. Samples were analyzed for volatile organics, semi-volatile organics, PCBs, total metals, phenolics, oil and grease, cyanide, and general water quality parameters. The detected compounds are summarized in Table 3. All metal concentrations were low (< 0.5 mg/L for all metals) and are not reported.

Table 3: Groundwater Sampling and Analysis Results from 1995.

Compound	Range
Benzene	ND - 19 µg/L
Naphthalene	ND - 7 µg/L
Total Xylene	ND - 9 µg/L
Cyanide	ND - 0.032 mg/L
Phenolics	ND - 0.13 mg/L
Oil and grease	ND - 371 mg/L

1.4 FREE PHASE HYDROCARBONS

According to hydrocarbon and groundwater measurements from 29 wells and 18 piezometers, a hydrocarbon pool is floating above the groundwater. Measurements taken approximately every two weeks from November 1991 through March 1992 indicate that the hydrocarbon layer is not continuous throughout the site. Table 4 gives the range of hydrocarbon layer thicknesses. Not all wells contained measurable amounts of hydrocarbon.

Table 4: Hydrocarbon Layer Thickness at the ECI site, 1991 - 1992.

Monitoring Well	Product Thickness Range - Feet
MW01	3.91 - 7.80
MW02	0.05 - 1.74
MW03	none - 3.39
MW05	0.31 - 1.41
MW06	0.12 - 2.30
MW07	none - 0.11

MW08	0.84 - 1.93
MW09	none - 1.90
MW11	1.77 - 4.72
MW12	none - 3.52
MW13	none - 1.26
MW25	0.09 - 1.38
MW26	0.52 - 1.57
MW27	1.00 - 2.16
MW28	0.41 - 1.34
MW29	0.09 - 1.01
MW32	0.50 - 3.18
MW38	0.40 - 1.93
P01	none - 0.94
P11	0.18 - 1.40
P13	none - 0.38
P15	1.55 - 2.91
P16	none - 0.41
P18	none - 0.02
P20	1.10 - 1.98
P21	0.83 - 2.13
P22	none - 0.33
P23	0.89 - 2.39
P26	none - 0.43
P27	none - 0.50
P28	1.16 - 1.72

In addition to the past monitoring, information on the quantity of petroleum removed from the ECI site by pumping is provided to the Indiana Department of Environmental Management (IDEM) by BP Amoco/ARCO or their consultant. Some reports on the operation of the ARCO system are available for Contractor review. Information available for review is listed in Paragraph 1.6.

The free product from four wells was sampled in July 1991 and in January 1992. The hydrocarbon samples were analyzed for volatiles, RCRA metals, PCBs, and physical characteristics. Table 5 summarizes the results of detected compounds for all tests except the physical characteristics. The sample with the PCB concentration of 850 mg/kg was collected from MW06, located by the canal at the southern end of the property.

Table 5: Hydrocarbon Layer Analytical Results, 1991 - 1992.

Parameter	Range of detected concentrations	Number of samples collected	Number of samples with detected values
Benzene	51-920 mg/kg	4	4
Ethylbenzene	230-670 mg/kg	4	4
Toluene	51-920 mg/kg	4	4
Xylene	470-2300 mg/kg	4	4
Arsenic	0.5-2.3 mg/kg	4	3
Barium	0.2-0.5 mg/kg	4	2
Chromium	0.5-1.8 mg/kg	4	2
Lead	2.5-6 mg/kg	4	3
PCBs(total)	3-63, 850 mg/kg	4	1

The high PCB concentration detected in MW06 in July of 1991 led to a more extensive investigation of PCBs in the hydrocarbon layer. A total of 25 samples were collected from 13 wells and 5 piezometers over a time period

from October, 1991 to February, 1992. Seven out of the 25 samples collected contained detectable concentrations of PCBs. All of the detected concentrations were from wells or piezometers around MW06 or by the canal at the southern edge of the main refinery parcel. Excluding MW06, the detected PCB concentration range from 3 to 63 mg/kg.

During groundwater sampling activities conducted by Patrick Engineering in November 1995, free product levels were measured in the monitoring wells sampled. Free product was only present in wells MW01, MW26, and MW29. The thickness of free product varied from less than 0.1 feet (MW01) to over 3 feet (MW29).

In 1991 and 1992, samples of the hydrocarbon layer were collected and analyzed for API gravity, specific gravity, viscosity, and PCBs. Table 6: Properties of Hydrocarbon Layer summarizes the results. See Appendix 00200-B for this table.

1.5 FREE PHASE HYDROCARBON RECOVERY/CONFINEMENT SYSTEM

ARCO and the City of East Chicago, in agreement with the Indiana Department of Environmental Management (IDEM), conducted a subsurface investigation to determine the soil characteristics, the depth and extent of contamination, and to initiate clean-up activities for the ECI site. The work was performed in five phases:

Phase I: Surface Hydrocarbon Recovery - to address the confinement, handling, and recovery of hydrocarbons on the surface water.

Phase II: Facilitation/Mobilization - start-up tasks related to initial site preparation, site topography, and sampling for industrial hygiene and waste management.

Phase III: Free Phase Hydrocarbon Confinement/Recovery - confinement, handling, and recovery of free phase hydrocarbons on the groundwater beneath the site in the vicinity of the Lake George Branch of the Indiana Harbor Canal.

Phase IV: Reconnaissance Site Investigation - obtain existing information about the site and conduct non-intrusive sampling, and to select sampling locations for future phases.

Phase V: Site Investigation - activities related to characterizing the near-surface, unconfined aquifer at the ECI site.

Environmental Resource Management (ERM) completed phases I through IV from May, 1991 until October, 1992 for ARCO and the City of East Chicago. This work was documented in a report titled "Pilot Systems Report and Design Work Plan for the Full - Scale Free Phase Hydrocarbon Confinement/Recovery System - ECI Refinery Site," Environmental Resources Management - North Central, Inc., 1992. See Paragraph 1.6 for a summary of additional information available to the Contractor.

ARCO contracted with Geraghty & Miller, Inc. to prepare a hydrogeologic design as part of the Phase III work, and to perform the Phase V portion of the work described above. The Phase III work is described in Hydrogeologic Design Hydrocarbon Confinement/Recovery System, June 10, 1992. This work consisted of determining the optimum location, pump settings, and pumping rates for groundwater/hydrocarbon recovery wells and the affects on groundwater flow. The Phase V work is documented in a report entitled

"Phase V-A Investigation Report, ECI Refinery Site, East Chicago, Indiana," April 4, 1993. Relevant subsurface information from this report consisted of a detailed, long-term evaluation of the hydraulic interaction of the Canal and the shallow groundwater. See Paragraph 1.6 for a summary of additional information available to the Contractor.

1.6 GROUNDWATER LEVEL BELOW SURFACE

The following table represents the groundwater level below ground suface at various locations onsite. The Contractor shall use the map provided in Appendix 00320-B for reference in reviewing these groundwater levels. Although, groundwater characterization data is provided to the Contractor, it is not anticpated that the Contractor will come into contact with the groundwater for this project.

Well Number	Groundwater Level (ft)
MW-5	4.7
MW-6	3.6
MW-7	3.2
MW-11	1.5
MW-32	0.6
MW-33	0.0
CE-101	8.4
CE-104	0.4
CE-109	3.2

*

1.7 SURVEY CONTROL DATA AND MAPPING

In November 1997, Smith Engineering Consultants, Inc. was contracted by USACE, Chicago District to review pre- and post-site conditions, existing reports, as-built drawings, miscellaneous design and engineering drawings, utility maps, surveys, and various other maps and reports that Chicago District obtained from record archives of previous refinery owners. Field reconnaissance was conducted by Smith Engineering, and many of the existing structures referenced either the Indiana West State Plane coordinates or local ECI coordinates. The survey work provided conversion factors for translation between the two coordinate systems. In December, 1997 two brass ACOE datum control marks (brass caps) provided by the Chicago District were installed north of the project site (refer to Appendix 00200-A). These control marks were installed on the Cline Avenue (Hwy 912) bridges located at the northwest and northeast corners from the project. Two existing control points established in October, 1988 were field located on the south end of the project at the Lake George Canal Indianapolis street bridge on the southeast corner and the rail road bridge on the southwest corner. These four marks were tied and closed to establish horizontal and vertical control for the project.

In April 1994, Aero-Metric Engineering, Inc. was contracted by the U.S. Army Corps of Engineers Chicago District to prepare aerial mapping, topographic and planimetric project mapping for the ECI site in Lake County, Indiana. Stereo aerial photography was performed to complete the mapping requirements. The October, 1988 ground controls were used and verified to compile the mapping.

1.8 ADDITIONAL INFORMATION AVAILABLE

The following information is available for review. Information may be reviewed by contacting the U.S. Army Corps of Engineers Chicago District at 111 North Canal Street, Chicago, Illinois 60606-7206. The point of contact

is John Breslin at 312-846-5451.

a. The U.S. Army Corps of Engineers, Waterways Experiment Station (WES) was contracted by the Chicago District to perform a surface geophysical survey. The purpose of this survey was to attempt to locate pipeline, concrete foundations, and other buried structures that may remain in-place following demolition of the site. The work was conducted in August 1995 and documented in a report entitled "Geophysical Investigations at the Indiana Harbor CDF Site, East Chicago, Indiana", January 1996.

b. Real Estate Mapping Survey and Record Search, Smith Engineering Consultants, Inc., August 2000. The figures include survey results and some utility information.

* c. Pilot Systems Report and Design Work Plan for the Full-Scale Free Phase Hydrocarbon Confinement/Recovery System, Volumes 1 - 4, Environmental Resources Management, April 1992.

d. Monthly and quarterly operation reports, submitted by Arcadis Geraghty & Miller (ARCO's Consultant) to the Indiana Department of Environmental Management, covering the period of operation from November 1, 1998 until April 30, 2000. These reports include a summary of the oil quantity recovered and also well gauging data, including product layer thickness, for some of the existing wells located on the ECI property.

e. Geraghty & Miller, "Hydrogeologic Design Hydrocarbon Confinement/Recovery System", June 1992. Contains information on the installation of the ARCO recovery wells on the ECI site.

f. Geraghty & Miller, "Phase V-A Investigation Report, ECI Refinery Site, East Chicago Indiana", April 1993. Contains information on the hydraulics of the shallow groundwater. *

PART 2 PRODUCTS - Not applicable

PART 3 EXECUTION - Not applicable

-- End of Section --

Table 6: Properties of Hydrocarbon Layer

Well Number	Date Sampled	API gravity[1] (dimensionless)	Specific gravity[2,3]	Viscosity (centistokes)[4]	Aroclor 1248 (mg/kg)	Aroclor 1254 (mg/kg)	Aroclor 1260 (mg/kg)
MW01	7/19/91	33.4		3.3	<5	<5	<5
	1/8/92	32.5		3.6	<5	<5	<5
	Average	33.0	0.860				
MW05	2/14/92	41	0.820	1.63	NA	NA	NA
MW06	7/19/91	20.6		NA	850	<50	<50
	10/31/91	NA	NA	NA	380	<50	<50
	2/14/92	26.9		15.62	NA	NA	NA
	Average	23.8	0.911				
MW07	7/19/91	38.8	0.831	2.78	<5	<5	<5
MW11	12/12/91	30.4		5.1[5]	<1	3.0	<1
	1/8/92	30.5		7.33	<5	<5	<5
	Average	30.5	0.873				
MW12	12/12/91	33.2		8.8[5]	<1	<1	<1
	1/8/92	32.6		4.86	<5	<5	<5
	Average	32.9	0.861				
MW13	12/12/91	NA	NA	NA	<1	3.6	<1
	1/8/92	35.8	0.846	3.37	<5	<5	<5
MW25	1/8/92	NA	NA	NA	63	<25	<25
MW26	1/8/92	25.7	0.900	133.01	<5	<5	11.4
MW27	1/7/92	NA	NA	NA	<1	<1	<1
	2/14/92	29.3	0.880	4.94	NA	NA	NA
MW28	1/7/92	31.6	0.868	4.22	<1	<1	<1
MW29	1/7/92	NA	NA	NA	<1	<1	<1
MW32	1/7/92	45.8	0.798	1.39	<1	<1	<1
P06	11/4/91	NA	NA	NA	23	<5	<5
P11	1/8/92	35.8	0.846	3.43	<5	<5	<5
P13	1/8/92	NA	NA	NA	<5	<5	<5
P15	1/8/92	35.4	0.848	2.78	<5	<5	<5

Notes:

1. American Petroleum Institute (API) gravity analysis was conducted at 60° F.
2. Specific gravity was calculated by using the average API gravity as follows: 141.5/(131.5 + API gravity).
3. An average specific gravity of 0.858 was assumed for the following wells: MW16, MW20 – 25, MW29, P01, P06, P09, P12 - 13, P16 – 18.
4. Viscosity analyses were conducted at 25° C, unless otherwise noted.
5. Results presented were conducted at 20° C.
6. NA = not analyzed.

1.1.7 CONSTRUCTION EMISSIONS AIR MONITORING (Bid Item 0001AG, 0002AE, 0003AE)

1.1.7.1 Payment

Payment shall be made at the contract lump sum price for construction emissions air monitoring. Construction emissions air monitoring shall consist of real-time monitoring for particulates, as outlined in SECTION 01355 ENVIRONMENTAL PROTECTION. Payment constitutes full compensation for all labor, materials, equipment, sample analysis, and all other incidentals necessary to complete the work.

1.1.7.2 Unit of Measure

Unit of measure: Lump Sum (LS)

1.2 UNIT PRICE PAYMENT ITEMS

Payment items for the work of this contract on which the contract unit price payments will be made are listed in the BIDDING SCHEDULE and described below. The unit price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for each of the unit price items.

1.2.1 CLAY DIKE MATERIAL (Bid Item 0001AH, 0002AF, 0003AF)

1.2.1.1 Payment

Payment will be made at the contract unit price for clay dike material placed as described in SECTION 02331 DIKE CONSTRUCTION including excavating, loading, hauling, and placing of this material. Payment constitutes full compensation for furnishing all labor, materials, equipment, tools, and incidentals necessary to complete the work.

1.2.1.2 Measurement

Clay fill used for the dike construction will be measured for payment by the cubic yard, in-place. Quantities shall be determined by the average end area method every 100 feet, or as directed by the Contracting Officer. Pre-placement surveys shall be taken after the necessary excavation, and other preparation of the area has been performed. The Contractor shall notify the Contracting Officer's representative sufficiently in advance of the start of the placing operation to afford sufficient time during which to make the necessary original measurements.

Upon completion of the placement operation, the Contractor will notify the Contracting Officer's representative that final surveys will be performed. The surveys shall be performed by an independent licensed surveyor. Cost of surveys is considered incidental to dike construction. The Contractor should note that subsurface soils may be compressible, and shrinkage and settlement may occur during construction. No additional volume of fill shall be added to the survey quantity to account for settlement or shrinkage, but shall be incidental to the dike construction. The quantity of fill computed in the aforementioned paragraphs shall constitute the total measurement quantity for payment. No other method or means of determining quantities of placed impervious fill materials will be

considered.

1.2.1.3 Unit of Measure

Unit of measure: Cubic Yard (CY)

1.2.2 TOPSOIL (Bid Item 0001AJ, 0002AG, 0003AG)

1.2.2.1 Payment

Payment will be made at the contract unit price for topsoil as described in SECTION 02331 DIKE CONSTRUCTION, including excavating, loading, hauling, and placing of this material. Payment constitutes full compensation for all labor, materials, equipment, tools, and incidentals necessary to complete the work.

1.2.2.2 Measurement

Topsoil will be measured by the cubic yard. The material will be measured in its final position by the average end area method every 100 feet. Topsoil stripping and stockpiling at the borrow site will not be measured for payment and costs associated with the operations shall be considered incidental to the borrow site development.

1.2.2.3 Unit of Measure

Unit of measure: Cubic Yard (CY)

1.2.3 SEEDING (Bid Item 0001AK, 0002AH, 0003AH)

1.2.3.1 Payment

Payment will be made at the contract unit price for seeding as described in SECTION 02921 SEEDING, including loading, hauling, and placing of this material. Payment constitutes full compensation for all labor, materials, equipment, tools, and incidentals necessary to complete the work.

1.2.3.2 Measurement

The seeding will be measured for payment in AC of seed, completed and accepted.

1.2.3.3 Unit of Measuree

Unit of measure: Acre (AC)

1.2.4 ACCESS ROAD ON DIKE, GEOTEXTILE (Bid Item 0001AL, 0002AJ, 0003AJ)

1.2.4.1 Payment

Payment will be made at the contract unit price for geotextile installed as described in SECTION 02373 GEOTEXTILE. Payment constitutes full compensation for all plant, labor, materials, equipment, tools, and incidentals necessary to complete the work.

1.2.4.2 Measurement

Measurement shall be made of the as-built surface area in square yards covered by geotextile. No allowance will be made for waste, overlaps,

damaged materials, repairs, or materials used for the convenience of the Contractor.

1.2.4.3 Unit of Measure

Unit of Measure: Square Yards (SY)

1.2.5 ACCESS ROAD ON DIKE, CRUSHED SLAG AGGREGATE (Bid Item 0001AM, 0002AK, 0003AK)

1.2.5.1 Payment

Payment will be made at the contract unit price for delivery, placement, grading and compaction as described in SECTION 02722 CRUSHED SLAG AGGREGATE. Payment constitutes full compensation for all plant, labor, materials, equipment, tools, and incidentals necessary to complete the work.

1.2.5.2 Measurement

Measurement will be based upon certified waybills (tonnage) and certified delivery tickets, as approved by the Contracting Officer. Deductions will be made for any material wasted, unused, rejected, or used for convenience of the Contractor.

1.2.5.3 Unit of Measure

Unit of measure: Tons (TON)

* 1.2.6 UNSTABLE SUBGRADE, CRUSHED SLAG AGGREGATE (Bid Item 0001AN, 0002AL, 0003AL) *

1.2.6.1 Payment

Payment will be made at the contract unit price for delivery, placement, grading and compaction as described in SECTION 02722 CRUSHED SLAG AGGREGATE. Payment constitutes full compensation for all plant, labor, materials, equipment, tools, and incidentals necessary to complete the work.

1.2.6.2 Measurement

Measurement will be based upon certified waybills (tonnage) and certified delivery tickets, as approved by the Contracting Officer. Deductions will be made for any material wasted, unused, rejected, or used for convenience of the Contractor.

1.2.6.3 Unit of Measure

Unit of measure: Tons (TON)

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

SECTION 01355

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

33 CFR 328	Definitions
40 CFR 68	Chemical Accident Prevention Provisions
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
49 CFR 171 - 178	Hazardous Materials Regulations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety and Health Requirements Manual

STATE OF INDIANA

327 IAC 15-5-7	General requirements for storm water quality control
327 IAC 2-6-1	Spill prevention and spill response requirements
326 IAC 6-1-11.1	Lake County Fugitive Particulate Matter Control Requirements

1.2 DEFINITIONS

1.2.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, would meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents, waste solvents, and excess pesticides, and contaminated pesticide equipment rinse water.

1.2.4 Land Application for Discharge Water

The term "Land Application" for discharge water implies that the Contractor shall discharge water at a rate which allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" shall occur. Land Application shall be in compliance with all applicable Federal, State, and local laws and regulations.

1.2.5 Surface Discharge

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "waters of the United States" and would require a permit to discharge water from the governing agency. All projects with land disturbances greater than or equal to one acre in total area must have a National Pollution Discharge Elimination System (NPDES)Construction Site Activity Storm Water Permit, issued by the Indiana Department of Environmental Management.

1.2.6 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328, are considered waters of the United States.

1.2.7 Decontamination

Decontamination during the construction phase of this project is defined to mean removing all visible soil or residues from vehicles or personnel using brushing, pressure washing with water, steam cleaning, or some other procedures approved by the Contracting Officer's Representative. The Contractor shall ensure that the vehicle decontamination process is sufficient to remove all visible soil from the vehicle tires, undercarriages, or frames and to keep the public road surfaces free of site soils or foreign materials. The Contractor Officer's Representative shall be the final judge of whether the decontamination procedure is successful in achieving these criteria. Cleaning solvents shall not be used without the prior approval of the Contracting Officer's Representative.

1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.4 SUBCONTRACTORS

Assurance of compliance with this section by Subcontractors will be the responsibility of the Contractor. The Contractor shall also be responsible for insuring that haulers follow the approved route when hauling materials to be used in construction of the dikes.

1.5 PAYMENT

Air quality monitoring requirements included in Section 3.4 AIR RESOURCES, will be paid for the Construction Emissions Air Monitoring bid item. All other work in this section is incidental to the contract and shall be included in the contract price. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

1.6 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with SECTION 01330 SUBMITTAL PROCEDURES.

SD-01 Preconstruction Submittals

Environmental Protection Plan;G,HE

SD-02 Shop Drawings

Air Monitoring Summary;G,HE

1.7 ENVIRONMENTAL PROTECTION PLAN

Prior to commencing construction site activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Discussion of topics or issues which are not identified in this section, but which the Contractor considers necessary is not a requirement, but rather is an opportunity for the Contractor to improve the final project and/or environmental safety of the site through the use of his experience/expertise. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Protection Plan. The Environmental Protection Plan shall be current and maintained onsite by the Contractor. The Environmental Protection Plan shall include a Construction Plan. It is the responsibility of the Contractor to have the Construction Plan reviewed and approved by the local county Soil and Water Conservation District office, in the county where the construction activity will take place or to another appropriate state, county, or local reviewing authority, prior to submitting the Environmental Protection Plan to the Government. The Contractor shall contact IDEM's Rule 5 Coordinator at (317) 233-1864 or jdavis@dem.state.in.us to determine who is the appropriate reviewing authority. The reviewing authority can make recommendations and request amendments to the Construction Plan. The local county Soil and Water Conservation District office has 28 calendar days to review the Construction Plan. If after 28 calendar days the local county Soil and Water Conservation District has not provided written approval, assent to the Construction Plan is assumed. The Contractor shall provide written approval from the local county Soil and Water Conservation District, if provided, in the Environmental Protection Plan or documentation that the reviewing agency has exceeded the review period. If notice of a deficient plan is received, the plans must be revised to satisfy the deficiencies and resubmit to the reviewing agency, at which time the 28-day review period starts over. The Government will review the Environmental Protection Plan, including the Construction Plan, and then will submit the Notice of Intent (NOI) to the Indiana Department of Environmental Management after the plan has been approved. The Contractor will be notified of the submission date for the NOI. No land disturbing activity shall take place until 48 hours after submission of the NOI. Approval of the Contractor's plan will not relieve the Contractor of his responsibility for adequate and continuing control of pollutants and other environmental protection measures. For more information on the National Pollutant Discharge Elimination System (NPDES) General Permit Rule for Storm Water Discharges Associated with Construction Activity you can go to the following website:

http://www.in.gov/idem/water/npdes/permits/wetwthr/storm/rule5defs.html#noi

1.7.1 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.7.2 Contents

The Environmental Protection Plan shall include, but shall not be limited to, the following:

a. A list of Federal, State and local laws, regulations, and permits concerning environmental protection, pollution control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations and permits. A list of personnel who will implement and/or oversee environmental protection shall also be included.

b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.

c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.

d. Description of the Contractor's environmental protection personnel training program, including training for subcontractors.

e. A Construction Plan, which includes erosion and sediment controls. This Construction Plan must be approved by the local county Soil and Water Conservation District prior to the submission of the plan to the Government. The contents of the Construction Plan shall include, but are not limited to:

1. Project narrative and supporting documents, including the following information:

A. An index indicating the location, in the construction plans, of all information required in the Construction Plan.
B. Description of the nature and purpose of the project.
C. Legal description of the project site. The description should be to the nearest quarter section, township, and range, and include the civil township.
D. Soil properties, characteristics, limitations, and hazards associated with the project site and the measures that will be integrated into the project to overcome or minimize adverse soil conditions.
E. General construction sequence of how the project site will be built, including phases of construction.
F. Hydrologic Unit Code (14 Digit) available from the United States Geological Survey (USGS).
G. A reduced plat or project site map showing the lot numbers, lot boundaries, and road layout and names. The reduced map must be legible and submitted on a sheet or sheets no larger than eleven (11) inches by seventeen (17) inches for all phases or sections of the project site.

H. Identification of any other state or federal water quality permits that are required for construction activities associated with the owners project site.

2. Vicinity map depicting the project site location in relationship to recognizable local landmarks, towns, and major roads, such as a USGS topographic quadrangle map or county or municipal road map.

3. An existing project site layout that must include the following information:

A. Location and name of all wetlands, lakes, and water courses on or adjacent to the project site.

B. Location of all existing structures on the project site.

C. One hundred (100) year floodplains, floodway fringes, and floodways. Please note if none exists.

D. Soil map of the predominant soil types, as determined by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Soil Survey, or an equivalent publication, or as determined by a soil scientist. A soil legend must be included with the soil map.

E. Identification and delineation of vegetative cover, such as grass, weeds, brush, and trees, on the project site.

F. Land use of all adjacent properties.

G. Existing topography at a contour interval appropriate to indicate drainage patterns.

4. Final project site layout, including the following information:

A. Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, and common areas.

B. One hundred (100) year floodplains, floodway fringes, and floodways. Please note if none exist.

C. Proposed final topography at a contour interval appropriate to indicate drainage patterns.

5. A grading plan, including the following information:

A. Delineation of all proposed land disturbing activities, including off-site activities that will provide services to the project site.

B. Location of all soil stockpiles and borrow areas.

C. Information regarding any off-site borrow, stockpile, or disposal areas that are associated with a project site and under the control of the project site owner.

D. Existing and proposed topographic information.

6. A drainage plan, including the following information:

A. An estimate of the peak discharge, based on the ten (10) year storm event, of the project site for both preconstruction and postconstruction conditions.

B. Location, size, and dimensions of all storm water drainage systems, such as culverts, storm sewers, and conveyance channels.

C. Locations where storm water may be directly discharged into ground water, such as abandoned wells or sinkholes. Please note if none exist.

D. Locations of specific points where storm water

discharge will leave the project site.

E. Name of all receiving waters. If the discharge is to a separate municipal storm sewer, identify the name of the municipal operator and the ultimate receiving water.

F. Location, size, and dimensions of features, such as permanent retention or detention facilities, including existing or manmade wetlands, used for the purpose of storm water management.

7. A storm water pollution prevention plan associated with construction activities. The plan must be designed to, at least, meet the general requirements for storm water quality control described in Indiana's regulation, 327 IAC 15-5-7 and must include the following:

A. Location, dimensions, detailed specifications, and construction details of all temporary and permanent storm water quality measures.

B. Temporary stabilization plans and sequence of implementation.

C. Permanent stabilization plans and sequence of implementation.

D. Temporary and permanent stabilization plans shall include the following:

(i) Specifications and application rates for soil amendments and seed mixtures; and

(ii) The type and application rate for anchored mulch.

E. Construction sequence describing the relationship between implementation of storm water quality measures and stages of construction activities.

F. Self-monitoring program including plan and procedures.

G. A description of potential pollutant sources associated with the construction activities, which may reasonably be expected to add a significant amount of pollutants to storm water discharges.

H. Material handling and storage associated with construction activity shall meet the spill prevention and spill response requirements in Indiana's regulation, 327 IAC 2-6-1.

8. The post construction storm water pollution prevention plan. The plan must include the following information:

A. A description of potential pollutant sources from the proposed land use, which may reasonably be expected to add a significant amount of pollutants to storm water discharges.

B. Location, dimensions, detailed specifications, and construction details of all post construction storm water quality measures.

C. A description of measures that will be installed to control pollutants in storm water discharges that will occur after construction activities have been completed. Such practices include infiltration of run-off, flow reduction by use of open vegetated swales and natural depressions, buffer strip and riparian zone preservation, filter strip creation, minimization of land disturbance and surface imperviousness, maximization of open space, and storm water retention and detention ponds.

D. A sequence describing when each post construction storm water quality measure will be installed.

E. Storm water quality measures that will remove or minimize pollutants from storm water run-off.

F. Storm water quality measures that will be implemented to prevent or minimize adverse impacts to stream and riparian habitat.

G. A narrative description of the maintenance guidelines for all post construction storm water quality measures to facilitate their proper long-term function. This narrative description shall be made available to future parties who will assume responsibility for the operation and maintenance of the post construction storm water quality measures.

f. A Work Site and Access Roads Traffic Control Plan, and a plan for restricting unauthorized access in the work area. The Traffic Control Plan would include measures to reduce erosion by construction traffic, especially during wet weather.

g. Work Area Plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. The plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

h. The Spill Control Plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer and the local fire department or emergency response agency in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

3. Training requirements for Contractor's personnel and any subcontractors, and methods of accomplishing the training.

4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

6. The methods and procedures to be used for expeditious contaminant cleanup.

i. A Non-hazardous Solid Waste Disposal Plan identifying methods and locations for solid waste disposal, excluding clearing and demolition

debris. Specific information shall be provided on the proposed disposal of solid waste. The plan shall include schedules for disposal. The Contractor shall identify any subcontractors responsible for the transportation and disposal of waste. A Subtitle D RCRA permitted landfill shall be the minimum acceptable off-site solid waste disposal option. The Contractor shall verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. Evidence of the disposal facility's acceptance of the waste shall be attached to this plan during the construction. The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted. See SECTION 01100 GENERAL PROVISIONS for Borrow/Disposal Site information.

j. An Air Quality Monitoring Plan detailing provisions to assure that dust, debris, materials, trash, etc., do not migrate off-site and pose a hazard to the surrounding community. The Air Quality Monitoring Plan shall outline materials, methods, and procedures for monitoring and controlling air quality at the project site. Specific requirements for the Air Quality Monitoring Plan are outlined in Paragraph 3.4, Air Resources.

k. A Contaminant Prevention Plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

l. A Wastewater Management Plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, decontamination water, dewatering of ground water, hydrostatic test water, and water used in flushing of lines.

m. A historical, archaeological, cultural resources, biological resources, and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

n. Environmental monitoring plans for the job site, including land, water, and noise monitoring.

* o. A Decontamination Plan shall be developed and shall include

measures to prevent mud or dirt from being transported onto paved public roads. It shall also describe the number and placement of decontamination or rinse stations, equipment, and methods used to decontaminate or rinse equipment and vehicles. Work vehicles or equipment must be inspected prior to leaving the site to visably check for mud or dirt. If mud or dirt is visible then that work vehicle or equipment must be rinsed to prevent the mud or dirt from being transported onto public roads. After rinsing all work vehicles and equipment shall be inspected by the COR for approval before leaving the site. The vehicle or equipment decontamination or rinse shall be accomplished using a high pressure power washer, steam cleaner, or other cleaning equipment approved by the Contracting Officer. Should mud and dirt be transported onto paved public roads by vehicles or runoff, the Contractor shall immediately remove the mud or dirt from the pavement using commercial street cleaning equipment, such as a "street sweeper", or other equipment approved by the Contracting Officer. The decontamination or rinse pad shall be constructed in a manner that will allow collection of the wash water for subsequent disposal at a remote on-site location and will provide a stable base for cleaning operations. The Contractor shall develop a plan that will include zone(s) where employee vehicles will not need to be checked prior to leaving the site, as well as an work zone(s)that can be used to rinse equipment and vehicles just prior to leaving the site. *

1.7.3 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

1.8 PROTECTION FEATURES

This paragraph supplements FAR Clause 52.236-9 "PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS". Prior to the start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of FAR Clause 52.236-9, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.9 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications, which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will

have an adverse environmental impact.

1.10 NOTIFICATION

The Contractor is responsible for notifying the Contracting Officer of any noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan and proposed corrective actions. If the Contractor fails to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

The Contractor shall comply with the terms and conditions of the State of Indiana's NPDES General Permit for storm water run-off associated with the construction activity. The Government will apply for coverage under the General Permit, run the public notice, and will submit the Notice of Intent (NOI) to the Indiana Department of Environmental Management and the appropriate reviewing agency. The Contractor shall be responsible for complying with all environmental permits and commitments required by Federal, State, Regional, and local environmental laws and regulations.

3.1.1 NOI POSTING REQUIREMENT

The Government will provide copies of the NOI, and all other Government correspondence with IDEM, to the Contractor. The Contractor shall post the information required in 327 IAC 15-5-7(b)(6) in a publicly accessible location near the main entrance of the project site. The location will be jointly agreed to by the Contractor and the Government during the Pre-Construction Conference. The Contractor shall take all actions necessary to keep the NOI and correspondence protected from the weather so that it remains legible. If, in the judgment of the Contracting Officer's Representative, the documents degrade to the point of being illegible, the Contractor shall replace the documents with fresh copies and remedy the problems that caused the degradation.

3.2 LAND RESOURCES

The environmental resources within the project boundaries and those affected outside the limits of permanent work under this contract shall be protected during the entire period of this contract. The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor. Section 1.8 includes information on protection of features that shall be identified in a pre-construction site survey.

3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.2.2 Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. The area of bare soil exposed at any one time by construction operations should be kept to a minimum. The Contractor shall construct or install temporary and permanent erosion and sediment control best management practices (BMPs). BMPs may include, but not be limited to, vegetation cover, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. The Contractor's best management practices shall also be in accordance with the State of Indiana National Pollutant Discharge Elimination System (NPDES) Storm Water Pollution Prevention requirements. Any temporary measures shall be removed after the area has been stabilized. All construction areas shall be seeded as soon as possible following construction.

There are currently silt fences and/or pipe berms along the east, west, and north perimeters of the work limits. The pipe berms consist of an 8 to 12 inch HDPE pipe laid on the ground surface with a 20 mil HDPE liner draped over the pipe and buried on both sides of the pipe. The purpose of the pipe berms is to prevent surface water from running off of the site. The Contractor shall either remove and replace the silt fences and pipe berms with equivalent surface water runoff control devices or repair and maintain the existing silt fences and pipe berms throughout the duration of the Contract. Regardless of whether they are repaired or replaced with equivalent features, the Contractor shall implement a weekly inspection and repair program. Following completion of the seeding and stabilization described in the above paragraph, the Contractor shall either remove the silt fence and pipe berms from the site, or, at the discretion of the Contracting Officer's Representative, repair the silt fences and pipe berms to like-new conditions and leave them in place.

3.2.3 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved by the Contracting Officer. Borrow areas and spoil areas shall be managed to minimize erosion and to prevent sediment from entering nearby waters or leaving the site as runoff. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas from erosion and sedimentation.

3.3 WATER RESOURCES

The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters.

3.4 AIR RESOURCES

Equipment operation, activities, and processes performed by the Contractor in accomplishing the specified construction shall comply with all applicable Federal, State, and local air quality laws and regulations. The Contractor shall submit an Air Quality Monitoring Program to ensure that the release of airborne particulates is minimized, and that emissions from fieldwork activities do not adversely impact air quality in the surrounding community. The Contracting Officer must approve the Air Quality Monitoring Plan before work can begin on the site. The requirements of this Program are outlined in the following paragraphs.

3.4.1 Air Quality Requirements

The Contractor will conduct air monitoring to confirm that the release of airborne particulates due to dike construction activities does not adversely impact the air quality in the project vicinity. The requirements for this monitoring are distinct from the personal exposure monitoring required by OSHA for the purpose of ensuring site worker health and safety. The Contractor must comply with action levels listed within the state of Indiana's fugitive dust regulation, 326 IAC 6-1-11.1 (Lake County Fugitive Particulate Matter Control Requirements). Particulate emissions include dust particles, aerosols, and other particulate byproducts from construction activities, including diesel emissions. The following particulate matter emission limitations shall apply to all Contractor activities:

a. The average instantaneous opacity of fugitive particulate emissions from unpaved roads and parking lots shall not exceed ten percent (10%).

b. The average instantaneous opacity of fugitive particulate emissions from batch transfer shall not exceed ten percent (10%).

c. The opacity of fugitive particulate emissions from storage piles and exposed areas shall not exceed ten percent (10%) on a six (6) minute average.

d. For material transportation activities:

i. There shall be zero percent (0%) frequency of visible emission observations of material during the inplant transportation of material by truck or rail at any time.

ii. The opacity of fugitive particulate emissions from the inplant transportation of material by front-end loaders and skip hoists shall not exceed ten percent (10%) by averaging three (3) opacity readings taken at five (5) second intervals.

e. Any facility not specified in the above rules shall meet a twenty percent (20%), three (3) minute average opacity standard.

3.4.2 Air Monitoring Methods

The Air Quality Monitoring Program shall detail the Contractor's methods for monitoring fugitive dust emissions. The Contractor shall indicate specific instrumented, visual, or otherwise applicable techniques to be employed to verify compliance with the emission limitations listed in Paragraph 3.4.1. The Contractor shall provide an outline of necessary equipment, materials, personnel, or ancillary items necessary for the successful implementation of the Air Quality Monitoring Plan. The Contractor shall also indicate the frequency and duration of monitoring efforts to ensure compliance with the rules listed in Paragraph 3.4.1, titled Air Quality Requirements. Monitoring for fugitive dust emissions shall be performed every day while dike construction activities are ongoing at the site.

3.4.3 Control Measures for Particulate Emissions

The Air Quality Monitoring Plan shall specify measures that will be implemented to prevent and control fugitive particulate emissions. If State of Indiana standards for particulate emissions are exceeded, or if there is a visible dust plume migrating away from the work zone(s), the Contractor shall take steps to control the dust level in the work area, and implement corrective action to reduce future particulate emissions.

The Contractor shall be responsible for controlling particulate emissions at all times, including weekends, holidays, and hours when work is not in progress. The Contractor shall implement control measures at excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas. Control measures may include, but are not limited to:

a. covering of trucks;

b. covering of stockpiles; and

c. water/spray foam application.

3.4.4 Compliance Documentation

The Contractor shall keep the following documentation to show compliance with each of his control measures or control practices:

a. A map or diagram showing the location of all emission sources controlled, including the location, identification, length, and width of roadways.

b. For each application of water or chemical solution to roadways, stockpiles, or construction areas, the following shall be recorded:

i. The name of the agent;

ii. The location of the application;

iii. The application rate;

iv. The total quantity of agent used;

v. If diluted, the percent of concentration used; and

vi. The material data safety sheets (MSDS) for each chemical.

3.4.5 Monitoring and Compliance Equipment

The Contractor is responsible for supplying all monitoring equipment, materials, and labor for air monitoring activities, including samplers, sampling media, and power for sampling equipment, as necessary. The Contractor is responsible for all equipment, materials, and personnel for implementing fugitive dust control and compliance measures.

3.4.6 Data Management

At a minimum, the Contractor shall record, and make available for inspection by the Contracting Officer, information to include:

a. Date, time, and location of all monitoring events;

b. Type(s) of field activities underway in the vicinity of the monitoring;

c. Type of monitoring equipment (if applicable) and name of operator for every monitoring event;

d. Calibration and maintenance of monitoring equipment (if applicable); and

d. Documentation of any exceedences of action levels, and associated corrective actions, as outlined in Paragraph 3.4.4, titled Compliance Documentation.

3.4.7 Air Monitoring Summary

The Contractor shall assemble all data, discussed in the previous paragraph, in the form of a weekly Air Monitoring Summary. This report shall be submitted to the Contracting Officer in an electronic format.

3.4.8 Odors

Odors shall be controlled at all times for all dike construction activities, processing and preparation of materials. The odors shall not cause a health hazard and shall be in compliance with State of Indiana regulations and/or local ordinances.

3.4.9 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall use methods and devices to control noise emitted by equipment. Noise levels shall in all cases be in compliance with applicable local codes and regulations.

3.4.10 Burning

Burning will not be allowed on the project site unless authorized in writing by the Contracting Officer. The specific time, location, and manner of burning shall be subject to approval.

3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.5.1 Solid Wastes

Solid wastes (excluding clearing and demolition debris) shall be placed in containers which are emptied on a regular schedule, and the Contractor shall specify the schedule in the environmental protection plan. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill shall be the minimum acceptable off-site solid waste disposal option. The Contractor shall verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. The Contractor shall comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

3.5.2 Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

3.5.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable State and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. The Contractor shall, at a minimum, manage and store hazardous waste in compliance with 40 CFR 262. The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berming or other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, State, and local laws and regulations. The Contractor shall transport Contractor generated hazardous waste off Government property within 60 days in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility.

3.5.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations. Storage of fuel on the project site shall be accordance with all Federal, State, and local laws and regulations, and must have the approval of the Contracting Officer.

3.5.5 Waste Water

Disposal of waste water shall be as specified below.

a. Waste water from construction activities, such as waste water generated by the decontamination of vehicles, etc., shall not be allowed to enter water ways. The Contractor shall propose in his Decontamination Plan where the wastewater shall be disposed of onsite.

b. All surface discharge shall be done in accordance with the requirements of the NPDES Construction Site Activity Storm Water Permit. Land application shall be in accordance with all Federal, State, Regional, and/or Local laws and regulations for pumping and land applying ground water.

3.6 RECYCLING AND WASTE MINIMIZATION

The Contractor shall participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project.

3.7 NON-HAZARDOUS SOLID WASTE DIVERSION REPORT

The Contractor shall maintain an inventory of non-hazardous solid waste diversion and disposal. The Contractor shall submit a report to the Contracting Officer on the first working day after each fiscal year quarter, starting the first quarter that non-hazardous solid waste has been generated. The following shall be included in the report:

a. Debris Disposed = _____ in cubic yards or tons, as appropriate.

b. Debris Recycled = _____ in cubic yards or tons, as appropriate.

c. Waste Sent to Waste-To-Energy Incineration Plant (This amount should not be included in the recycled amount) = _____ in cubic yards or tons, as appropriate.

3.8 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat.

3.9 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior

to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds.

3.10 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

3.11 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel and subcontractor personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area. The Contractor shall be responsible for insuring that all Subcontractors are trained in environmental protection. The Contractor shall include a description of the training content and timing in the environmental protection plan.

3.12 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, decontamination facilities, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

3.13 QUALITY CONTROL

The Contractor shall establish and maintain quality control for environmental protection of all items set forth herein. The Contractor shall record on daily reports any problems in complying with laws, regulations, ordinances, and corrective action taken in accordance with SECTION 01451 CONTRACTOR QUALITY CONTROL.

-- End of Section --

1.5 PROTECTION AND MAINTENANCE OF TRAFFIC

1.5.1 General

During construction the Contractor shall maintain and protect traffic on all roads going into and out of the project site during the construction period except as otherwise specifically directed by the Contracting Officer.

1.5.2 Traffic Safety

The contractor shall submit for approval a traffic safety plan for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by the State and local authorities having jurisdiction. The plan shall include protection of the traveling public from damage to person and property. The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations.

1.5.3 Roads Shared With Others

Another contractor working on removal of obstructions along the Lake George Canal shall share roads within the project limits as indicated on the drawings. The Corps of Engineers, Chicago District personnel, will administer this Obstruction Removal project. This project includes, but is not limited to, the demolition of abandoned pipelines in the Canal and under ground, hydrants and valves, concrete and wooden structures, concrete and asphaltic concrete pads, and bollards, and disposal of all items in the designated debris disposal area within the project limits. Contract duration of this project is 230 calendar days and target for commencement of the contract is October or November 2004. The contractor shall submit for approval a traffic safety plan for simultaneous safe operation and protection of both construction projects, including the provision of watchmen and flagmen, erection of barricades, and signs and shall be responsible for the execution of the traffic safety plan.

1.5.4 Haul Roads

The Contractor shall, at its own expense, construct and maintain access and haul roads necessary for proper prosecution of the work under this contract. Haul roads shall be constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided. The Contractor shall provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control shall be adequate to ensure safe operations and compliance with the environmental dust control criteria specified in SECTION 01355, ENVIRONMENTAL PROTECTION at all times. Location, grade, width, and alignment of construction and hauling roads shall be submitted for approval. Lighting shall be adequate to assure full and clear visibility for full width of haul road and work areas during any night work operations. Unless otherwise directed by the Contracting Officer's Representative, haul roads constructed by the contractor during the contract duration shall be removed after work is completed and the impacted area restored to its preconstruction conditions. Materials for haul roads construction shall be disposed of as specified in paragraph STOCKPILES.

f. Copies of laboratory data.

g. Table comparing analytical results to IDEM RISC Residential Closure Levels.

h. Discussion of results.

i. Conclusions.

The Contractor is responsible for maintaining accurate records to support information for development of the borrow source.

2.6 PLAN OF OPERATIONS

Prior to commencement of haul road construction or placing dike, the contractor shall submit for approval a Plan of Operations for accomplishing all dike construction and for the location and construction of haul roads. The plan of operations shall include the Contractor's proposed sequence of construction for dike, and methods and types of equipment to be utilized for all dike operations, including transporting, placing, and compaction. The plan shall also include the method of protecting the clay placed +/- 10 feet offset from the dike baseline from freezing after placement. This plan shall also include the names and addresses of the commercial testing labs which shall perform the soil testing and inspection and describe how all required soils testing shall be performed.

2.7 DIKE MATERIAL STOCKPILES

The contractor may utilize the areas indicated for stockpiling and processing dike material. Prior to commencing stockpiling of material the contractor shall submit for approval his plan for stockpiling material. The plans shall include but not be limited to identifying the area for stockpiling borrow material, method of preventing contamination of material, and processing borrow material. After work is completed, the areas utilized for stockpiling and processing materials shall be restored to its condition after clearing and grubbing as specified in paragraph CLEARING, GRUBBING, STRIPPING, DEMOLITION, AND PROTECTION.

PART 3 EXECUTION

3.1 CLEARING, GRUBBING, STRIPPING, DEMOLITION, AND PROTECTION

3.1.1 Clearing

Clearing shall be accomplished within the limits of existing ground to receive dike plus 200-foot strips along the exterior and interior dike toes and within the limits of the stockpile areas. Trees, downed timber, snags, slash, brush, garbage, trash, debris, fencing and other items shall be cleared flush with the existing ground surface. Clearing of borrow areas shall be limited to the minimum area required for construction operations.

3.1.2 Grubbing

Grubbing shall be accomplished within the limits of existing ground to receive dike plus 200-foot strips along the exterior and interior dike toes and within the limits of the stockpile areas. Grubbing includes the removal of stumps and roots and shall be accomplished to a depth of 1 foot below the existing ground surface for tree stumps equal or greater than two

(2) inches in diameter. No other work is required for tree stumps less than 2 inches in diameter.

3.1.3 Stripping

Stripping is not required.

3.1.4 Demolition

3.1.4.1 General

Existing fire hydrants and surrounding bollards, valves, and associated equipment shall be demolished and removed to 1 foot below the existing ground surface within the limits of the areas to be cleared and grubbed. It is anticipated that 10 or more fire hydrants and their associated bollards, valves, and equipment shall require removal. All demolished piping shall be plugged with concrete. Other structures not shown on the drawings and within the limits of the areas to be cleared and grubbed shall be demolished to 1 foot below ground surface. The COR shall be notified, before demolishing to 1 foot below ground, when other utilities, including underground storage tanks, not shown on the drawings are encountered during the work.

3.1.4.2 Optional Bid Item No. 2

In addition to demolition as described above, Optional Bid Item No. 2 includes demolition of the existing railroad tracks. Existing railroad rails, ties, spikes, and ballasts and their associated materials and hardware shall be demolished and removed to 1 foot below the existing ground surface within the limits of the area to be cleared and grubbed.

3.1.5 Protection

3.1.5.1 BP Amoco/ARCO Oil Recovery System

The existing BP AMOCO/ARCO Oil Recovery System as indicated on the drawings is operating. The oil recovery system shall remain in place and be protected for the duration of this contract. The contractor shall clearly identify the system and maintain a minimum clear distance of twenty-five (25) feet from the recovery pipes and system components. The contractor shall notify the COR of any damage to the pipes and system and repair it as directed by the COR at no additional cost to the Government.

3.1.5.2 Soil-Bentonite Slurry Trench Cutoff Wall

The location of the soil-bentonite slurry trench cutoff wall is indicated on the drawings. The contractor shall protect the cutoff wall for the duration of the contract. Construction equipment and machinery shall be driven over the cutoff wall only at the designated crossing points along the access road as indicated on the drawing in accordance with SECTION 01500, TEMPORARY CONSTRUCTION FACILITIES. Damage to the cutoff wall due to negligence of the contractor shall be repaired as directed by the COR at no additional cost to the Government.

3.1.5.3 Monitor/Observation Wells

The locations of the monitor/observation wells are indicated on sheet B-01, Boring and Monitoring Well Plan Locations. The contractor shall identify the well locations and protect them during the duration of the contract.

The monitoring of wells shall be in accordance with paragraph OBSERVATION WELLS AND CANAL LEVELS.

3.2 FILLING AND BACKFILLING

All holes resulting from grubbing operations and demolition of fire hydrants, other utilities and structures shall be filled with satisfactory material as specified. This material shall be placed in 6 inch layers to the elevation of the adjacent ground surface and each layer compacted to a density at least equal to that of the adjoining undisturbed material.

3.3 DISPOSITION OF CLEARED, GRUBBED, DEMOLISHED MATERIAL

All materials resulting from clearing, grubbing, and demolition operations shall be disposed of in the indicated debris disposal area. In no case shall any material resulting from clearing, grubbing, and demolition operations be buried or permanently placed within the dike foundation or removed from the project site.

3.4 EXCAVATION

3.4.1 Over Excavation

3.4.1.1 Within Limits of Dike Foundations

Over excavation within the limits of the foundations of dikes shall be backfilled to grade in accordance with paragraph PREPARATION OF FOUNDATION AND PARTIAL FILL SURFACES.

3.4.2 Slopes and Surcharges

Temporary excavation slopes for any excavation shall not be steeper than the specified finished slope or the specified construction slope. This may be accomplished by benching the temporary slope so that the average slope is not steeper than the specified slope. In addition, no temporary, permanent, or construction slope shall be surcharged with excavated or stockpiled material. Any slide or other adverse conditions caused by failure of the Contractor to maintain these conditions shall be considered the responsibility of the Contractor.

3.5 TOLERANCES

All dikes shall be constructed to the grades, lines, and cross-sections shown. At all points a tolerance of 4 inches above or below the prescribed grade shall be permitted in the final dressing, provided that any excess material is so distributed that the crown of the dike drains and that there are no abrupt humps or depressions in any surfaces.

3.6 STOCKPILES

Provisions of paragraph SLOPES AND SURCHARGES are applicable to all stockpiled materials. Upon completion of construction operations, all remaining stockpiled material shall be removed and legally disposed off-site. The Contractor is solely responsible for the location of off-site disposal areas, the transport to the disposal areas, and all costs associated with disposal.

3.7 SURFACE DRAINAGE OF COMPLETED AREAS

The areas shown on the drawings designated as "GRADE FOR SURFACE DRAINAGE", and the finished dike areas shall be graded to the lines and grades shown on the drawings. The surface shall be free from sharp ridges, gullies, potholes, sinkholes, and any other surface irregularities. A tolerance of 4 inches above or below the prescribed grade shall be allowed provided that the surface drains in the direction as indicated on the drawings.

3.8 PREPARATION OF FOUNDATION AND PARTIAL FILL SURFACES

3.8.1 General

After clearing and grubbing as described in paragraph CLEARING AND GRUBBING of the dike foundation to the extent indicated or otherwise required, the sides of stump holes, test pits, and other similar cavities or depressions shall be broken down so as to flatten out the slopes, and the sides of the cut or hole shall be scarified to provide bond between the foundation material and the fill. Unless otherwise directed, each depression shall be filled with the same material type that is to be placed immediately above the foundation. Haul roads within the dike foundation shall be loosened by scarifying, plowing, discing, or harrowing to a minimum depth of 6 inches, then mixed with the surrounding material. The fill shall be placed in layers, moistened, and compacted in accordance with the applicable provisions of paragraphs PLACEMENT, MOISTURE CONTROL, and COMPACTION for the specific material type. Materials which cannot be compacted by roller equipment because of inadequate clearances shall be compacted with power tampers in accordance with the paragraph COMPACTION for the specific material type. After filling of depressions and immediately prior to placement of compacted fill in any section of the dike, the foundation of such section shall be loosened thoroughly by scarifying, plowing, discing or harrowing to a minimum depth of 4 inches, and the moisture content shall be adjusted to the amount specified in paragraph MOISTURE CONTROL for the appropriate type of material. Immediately prior to placement of compacted fill on or against the surfaces of any partial fill section, all material containing cracks or gullies shall be loosened by scarifying, plowing, discing or harrowing to a minimum depth of 6 inches, and the moisture content shall be adjusted as specified in paragraph MOISTURE CONTROL for the appropriate type of material. The surface of the partial fill section upon which fill is to be placed shall then be compacted as hereinafter specified for the appropriate type of fill. No separate payment will be made for loosening and rolling the foundation area, the abutment area, or the surfaces of partial fill sections, but the entire cost thereof shall be included in the applicable contract price for fill.

3.8.2 Benching

If option 2 is awarded, benching into existing dike and abutments is required in order to place and compact the material in horizontal layers. The vertical face cut into the existing dike or abutment resulting from the benching operation shall be a minimum of 36 inches in height but shall not exceed 48 inches in height.

3.9 PLACEMENT AND SPREADING

3.9.1 General

Prior to beginning dike placement on the dike foundation the Contractor shall notify the Government that the foundation is ready to receive fill.

No fill shall be placed on any part of the dike foundation until such areas have been inspected and given final approval by the Contracting Officer.

3.9.1.1 Gradation and Distribution

The gradation and distribution of materials throughout each zone of the dike shall be such that the dike shall be free from lenses, pockets, streaks, and layers of material differing substantially in texture or gradation from surrounding material of the same class. If lenses, pockets, or layers of materials differing substantially in texture or gradation from surrounding material occur in the spread material, the layer shall be mixed by harrowing or any other approved method to blend the materials. During the placing and spreading process, the Contractor shall maintain at all times a force of workers adequate to remove all roots, debris, and oversize stone from all dike materials. All stones and rock fragments larger than 2/3 of the placement lift thickness measured by the greatest dimension shall be removed at the source prior to hauling to the fill. No fill shall be placed upon a frozen surface, nor shall snow, ice, or frozen earth be incorporated in the dike.

3.9.1.2 Foundations and Partial Dike Fills

The foundations and all partial dike receiving fills shall be kept thoroughly drained. Placing operations shall be such as to avoid mixing of materials from adjacent sections as much as practicable.

3.9.1.3 Equipment Traffic

Equipment traffic on any dike zone shall be routed to distribute the compactive effort as much as practicable. Ruts formed in the surface of any layer of spread material shall be filled before that material is compacted. If, in the opinion of the Contracting officer, the compacted surface of any layer of material is too smooth to bond properly with the succeeding layer, the surface shall be loosened by scarifying or other approved methods before material from the succeeding layer is placed.

3.9.2 Placement on Surfaces Containing Frozen Materials

Dike shall not be placed on a foundation which contains frozen material. This prohibition encompasses all layers of previously placed and compacted earth fill which become the foundations for successive layers of earth fill except natural ground. All material that freezes during the construction work, or during periods of temporary shutdowns, such as, but not limited to nights, holidays, weekends, or winter shutdowns of earthwork operations, shall be removed to a depth that is acceptable to the Contracting Officer and replaced with new material. Alternatively, the material shall be thawed, dried, reworked and recompacted to the specified criteria before additional material is placed. Placement of fill shall cease due to cold weather when the sheepsfoot pods are no longer able to penetrate the ground. Dike material shall not contain frozen clumps of soil, snow or ice. In addition, the clay placed +/- 10 feet offset on the dike baseline shall be protected against freezing. The method proposed for protecting this clay shall be included in the Plan of Operations.

3.9.3 Placing of Clay Dike Material

The clay dike material shall be placed and spread in layers not more than 8 inches in uncompacted thickness. Layers should be started full out to the slope stakes and shall be carried substantially horizontal and parallel to

the dike centerline with sufficient crown or slope to provide satisfactory drainage during construction. The materials for clay fill shall be placed or spread in layers, the first layer not more than 4 inches in thickness and the succeeding layers not more than 8 inches in thickness prior to compaction.

3.10 MOISTURE CONTROL

3.10.1 General

Material that is not within the specified moisture content limits after compaction shall be reworked to obtain the specified moisture content, regardless of density. The moisture content after compaction shall be within the limits of the optimum moisture content and 2 percentage points above optimum as determined by ASTM D 698.

3.10.1.1 Insufficient Moisture for Suitable Bond

If the top or contact surfaces of a partial fill section become too dry to permit suitable bond between these surfaces and the additional fill to be placed thereon, the Contractor shall loosen the dried materials by scarifying or discing to such depths as may be directed by the Contracting Officer, shall dampen the loosened material to an acceptable moisture content, and shall compact this layer in accordance with the applicable requirements of paragraph COMPACTION.

3.10.1.2 Excessive Moisture for Suitable Bond

If the top or contact surfaces of a partial fill section become too wet to permit suitable bond between these surfaces and the additional fill to be placed thereon, the wet material shall be scarified and permitted to dry, assisted by discing or harrowing, if necessary, to such depths as may be directed by the contracting officer. The material shall be dried to an acceptable moisture content, and shall be compacted in accordance with the applicable requirements of paragraph COMPACTION.

3.10.1.3 Drying Wet Material

Material that is too wet shall be either spread on the dike and permitted to dry or be dried in the borrow area prior to bringing to the dike and be assisted by discing or harrowing, if necessary, until the moisture content is reduced to an amount within the specified limits.

3.10.1.4 Increasing Moisture in Dry Material

The moisture content of material that is too dry, shall be adjusted on the dike or shall be adjusted in the borrow area prior to bringing to the dike. The Contractor shall add water to the fill material and by harrowing, or other approved methods, work the moisture into the material until a uniform distribution of moisture within the specified limits is obtained. Water applied on a layer of fill on the dike shall be accurately controlled in amount so that free water shall not appear on the surface during or subsequent to rolling. Should too much water be added to any part of the dike, the rolling on that section of the dike shall be delayed until the moisture content of the materials is reduced to an amount within the specified limits. If it is impracticable to obtain the specified moisture content by wetting or drying the material on the fill, the Contractor may be required to pre-wet or dry back the material at the source of excavation or in the borrow area.

3.10.1.5 Removal of Unsuitable Materials

During the placement and preparation of the embankment fill for compaction, the contractor shall have laborer(s) available as necessary to remove sticks, roots, stones, and other unsuitable materials that may be contained within the borrow material and exposed by the harrowing and discing operations. All roots and sticks larger than 6-inches in length, or 1/4-inch in diameter shall be removed from the grade prior to compaction. All stones in excess of 3-inches in length, width, or diameter shall be removed.

3.11 COMPACTION AND SEALING

3.11.1 Compaction Equipment

Compaction equipment shall be sheepsfoot rollers conforming to the following requirements and shall be used as prescribed in subsequent paragraphs.

a. Towed -sheepsfoot rollers shall consist of a heavy duty double drum unit, with a drum diameter not less than 60 inches, and an individual drum length of not less than 60 inches. The drums shall be capable of being ballasted with water or a combination of sand and water. Each drum shall have staggered feet uniformly spaced over the cylindrical surface such as to provide approximately three sheepsfoot feet for each two square feet of drum surface. The sheepsfoot feet shall be 7 to 9 inches in clear projection from the cylindrical surface of the roller and shall have a face area of not less than 5 square inches nor more than 7 square inches. The roller shall be equipped with cleaning fingers, so designed and attached as to prevent the accumulation of material between the sheepsfoot feet, and these cleaning fingers shall be maintained at their full length throughout the periods of use of the roller. The weight of the roller shall not be less than 3500 pounds per foot of linear drum length weighted, and shall not be more than 2000 pounds per foot of drum length empty. The two drums comprising one roller unit shall be yoked such that they shall oscillate when traversing uneven surfaces. The Contractor may be required to add ballast to the roller to the maximum capacity specified by the manufacturer of the roller. The roller shall be drawn by a crawler-type or a rubber-tired tractor at a speed not to exceed 3.5 miles per hour. The use of the rubber-tired tractor shall be discontinued if the tires leave ruts that prevent uniform compaction by the sheepsfoot roller. If sheepsfoot rollers are used in tandem, not more than two rollers in tandem shall be permitted and in such case, one trip of the tandem rollers over any surface shall be considered as two passes. When sheepsfoot rollers are used in tandem, the tamper foot spacing shall be offset so that the circumferential rows on the rear drums are in line with the mid-point of the circumferential rows on the forward drums.

b. Self-propelled - At the option of the Contractor, self-propelled sheepsfoot rollers may be used in lieu of tractor-drawn sheepsfoot rollers. Self-propelled rollers exceeding the empty weight requirement may be used provided that by the substitution of sheepsfoot feet, having a face area not exceeding 14 square inches, the nominal foot pressure on the sheepsfoot feet of the self-propelled roller can be adjusted to approximate the nominal foot pressure of the towed roller for the particular working condition required for the towed rollers.

The sheepsfoot feet shall be 7 to 9 inches in clear projection from the cylindrical surface of the roller. For self-propelled rollers, in which steering is accomplished through use of rubber-tired wheels, the tire pressure shall not exceed 40 pounds per square inch. Self-propelled rollers shall be operated at a speed not to exceed 3.5 miles per hour.

3.11.1.1 Sprinkling Equipment

Sprinkling equipment shall consist of tank trucks, pressure distributors or other equipment designed to apply water uniformly and in controlled quantities to variable width of surface.

3.11.1.2 Miscellaneous Equipment

Scarifiers, disks, spring-tooth or spike-tooth harrows, spreaders, and other equipment shall be suitable for use in dike construction and approved by the Contracting Officer. Equipment used for blending fill material shall be capable of penetrating the full loose lift thickness of the specific material type.

3.11.2 Compaction of Clay Dike Material

After a layer of material has been dumped and spread, it shall be harrowed to break up and blend the fill materials and to obtain uniform moisture distribution. Harrowing shall be performed with a heavy disk plow, or other approved harrow, to the full depth of the layer. If one pass of the harrow does not accomplish the breaking up and blending of the materials, additional passes of the harrow shall be required, but in no case shall more than three passes of the harrow on any one layer be required for this purpose. When the moisture content and the condition of the layer are satisfactory, the lift shall be compacted to a minimum of 90% of the maximum dry density as determined by the Contractor in accordance with ASTM D 698.

3.11.3 Sealing Equipment

Vibratory rollers for sealing clay surfaces shall be equipped with a smooth steel compaction drum. Vibratory rollers may be either towed or self-propelled. Rollers shall be operated at speeds not to exceed 1.5 mph.

3.12 FIELD QUALITY CONTROL

3.12.1 Clearing, Grubbing, and Stripping

The Contractor shall establish and maintain quality control for clearing, grubbing, and stripping operations to assure compliance with contract requirements, and maintain records of the quality control for all construction operations including but not limited to the items indicated below. These records, as well as the records of corrective actions taken, shall be furnished to the Government in accordance with SECTION 01451 CONTRACTOR QUALITY CONTROL.

3.12.1.1 Clearing

Station to station limits, transverse clearing limits from applicable centerline; percentage of area complete; types of materials cleared.

3.12.1.2 Grubbing

Station to station limits, transverse grubbing limits from applicable centerline; percentage of area complete; type of material; filling of grubbed holes.

3.12.2 Dike General

As a part of the Contractor Quality Control (CQC) system required by SECTION 01451 CONTRACTOR QUALITY CONTROL, the Contractor shall establish and maintain field quality control for foundation preparation, dike and backfill operations to assure compliance with contract requirements and maintain detailed records of field quality control for all operations including but not limited to the following:

a. Earthwork Equipment

Type, size, number of units and suitability for construction of the prescribed work.

b. Foundation Preparation

Methods of preparing the foundations in advance of dike and backfill construction and methods for providing drainage of the foundation and partially completed fills.

3.12.3 Correlation of Borrow Materials with Materials Delivered to Site

Borrow soil that arrives on-site shall have the "Acceptable Zone" number and borrow site location established during the borrow source assessment identified on the truck ticket. The Contractor shall employ a registered geologist or geotechnical engineer to verify that the material that arrives to the site is the same as identified on the truck ticket and that corresponding compaction curve for the identified soil type is used to determine in-place density. The material shall be characterized as a different type than that established on the truck ticket if it has a different visual classification or if its compaction properties vary significantly from previous materials.

3.12.4 In-Place Clay Testing

The Contractor shall submit a copy of each Daily Summary of In-Place Clay tests the next work day following the testing. Moisture content and density tests shall be performed in a grid pattern. The grid pattern shall be staggered for successive lifts so that sampling points are not at the same location in each lift. Under no circumstances shall results from multiple tests be averaged to achieve a passing result. Passing tests shall have values as described in paragraphs CLAY DIKE MATERIAL and ACCEPTABLE ZONE DEVELOPMENT. In-place clay tests shall be performed at frequencies, using forms, and methods in accordance with Table 2. The Contractor shall use the forms provided in Appendix B unless an alternative is submitted and approved.

TABLE 2
MOISTURE CONTENT, DENSITY, PERMEABILITY, MOISTURE, AND ATTERBERG TEST OF IN-PLACE CLAY

Property	Testing Frequency	Form Number	Method
Nuclear Moisture Content	1 per 8500 square ft (min 1 per day)	ENG 4080 MODIFIED BY CHICAGO DISTRICT	ASTM D 3017
Nuclear Density	1 per 8500 square ft (min 1 per day)	ENG 4080 MODIFIED BY CHICAGO DISTRICT	ASTM D 2922
Hydraulic Conductivity	1 per lift +/- 10 ft offset from dike baseline	ENG 3844	ASTM D 5084
Atterberg Limits	1 at same location as Hydraulic Conductivity test	ENG 3838	ASTM D 4318
Particle Size	1 at same location as Hydraulic Conductivity test	ENG 3841 and ENG 2087	ASTM D 422
Laboratory Moisture Content	1 at same location as Hydraulic Conductivity test	ENG 3835	ASTM D 2216
Undisturbed Dry Density	1 at same location as Hydraulic Conductivity test		

3.12.4.1 Nuclear Density and Moisture Testing Methods

Nuclear density readings shall be taken in the direct transmission mode. When ASTM D 2922 is used, the calibration curves shall be checked and adjusted using the sand cone ASTM D 1556 or balloon density method ASTM D 2167. The calibration curves furnished with the moisture gauges shall also be checked along with density calibration checks as described in ASTM D 3017.

Should a density test fail the Contractor shall either continue to compact the same layer until a passing test is achieved, or remove the failing layer according to paragraph REPAIR OF FAILING AREAS. Should a moisture test fail the Contractor shall remove the failing material as described in paragraph REPAIR OF FAILING AREAS.

3.12.4.2 Hydraulic Conductivity Tests of In-Place Clay

Undisturbed samples shall be taken for hydraulic conductivity testing at a frequency as shown in Table 3. Samples shall be cut from the lift in accordance with ASTM D 1587 and transported in the vertical position in accordance with ASTM D 4220, Group C. Hydraulic conductivity testing shall be conducted in accordance with the requirements in paragraph HYDRAULIC CONDUCTIVITY TESTING. If any test result is greater than the "Maximum Allowable Hydraulic Conductivity" identified in paragraph ACCEPTABLE ZONE DEVELOPMENT, modifications shall be proposed and approved for the placement of additional clay of that type. If the hydraulic conductivity of any test is more than one-half of one order of magnitude greater than the "Maximum Allowable Hydraulic Conductivity", three (3) additional tests shall be performed near the location of the original failed test. If all retests pass, no additional action shall be taken. If any of the retests fail, the area shall be repaired out to the limits defined by passing hydraulic conductivity tests as described in paragraph REPAIR OF FAILING AREAS. The area shall then be retested as directed. Repairs to the clay layer shall be documented including location and volume of soil affected, corrective action taken, and results of retests.

3.12.4.3 Repair of Failing Areas

The limits of failing material removed shall be defined by the nearest passing tests and include all material in that layer from inside to outside slope. The Contractor is prohibited from stockpiling material removed from failing tests at other locations on the grade of the dike alignment.

3.12.5 Erosion

Erosion that occurs in the clay layer shall be repaired and grades re-established.

3.12.6 Testing by the Government

During the life of this contract, the Government or its contractors will perform quality assurance tests.

3.12.7 Retests

Areas that have been repaired shall be retested. Repairs to the clay layer shall be documented including location and volume of soil affected, corrective action taken, and results of retests.

3.12.8 Inspection Survey

On a daily basis, the Contractor shall furnish the inspection records and the quantity of fill placed, as well as the records of corrective action taken, in accordance with SECTION 01451 CONTRACTOR QUALITY CONTROL.

3.13 Surface Reference Marks

The Contractor shall furnish and install eight (8) surface reference marks

at follows: Three (3) along the base bid alignment, Three (3) along the Option 1 alignment, and two (2) along the Option 2 alignment. The exact location of the reference marks will be determined by the Contracting Officer. The reference marks will be installed following completion of the dike and the aggregate road. The installation detail is provided at the end of this section as Appendix A. The Contract shall furnish the horizontal and vertical location of each steel rod with respect to established benchmarks. The accuracy of the locations shall be +/- 0.1 foot. The Contractor shall conduct his operation in such a manner that the reference marks will not be disturbed or damaged. Any reference mark disturbed or damaged due to negligence on the Contractor's part shall be replace or repaired and the correct horizontal and vertical locations shall be furnished at the Contractor's expense.

3.14 Observation Wells and Canal Levels

The Contractor shall obtain weekly observation well and canal levels. Each observation well to be monitored on a weekly basis is listed in Appendix C at the end of this section. Well locations are shown on the Drawings. The free product (if any) and water levels in each observation well shall be measured, on a weekly basis, to the nearest 0.01 foot, and shall be reported as an elevation on a standard form. The measurements shall be made using an electronic oil/water indicator graduated to 0.01 foot. If a floating free product hydrocarbon layer is encountered, the water level shall be corrected for the presence of the free product. The elevation of the Lake George Canal Branch of the Indiana Harbor Canal shall also be measured and recorded on the forms. The forms shall be provided to the Contracting Officer on a monthly basis. Both paper and electronic (Microsoft Excel) forms shall be submitted. The Contractor shall begin monitoring the observation wells at the start of fill placement. The monitoring shall continue until the contract is completed. Any observation well that is damaged in the opinion of the Contracting Officer as a result of the Contractor's negligence shall be repaired within five days at the Contractor's expense. If the observation well is destroyed, it shall be replaced, at no cost to the Government, as directed by the Contracting Officer.

-- End of Section --

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Adequate drainage shall be provided during the entire period of construction to prevent water from collecting or standing on the working area. Line and grade stakes shall be provided as necessary for control. Grade stakes shall be in lines parallel to the centerline of the area under construction and suitably spaced for string lining.

3.2 INSTALLATION

3.2.1 Placing

3.2.1.1 Area of Unstable Subgrade (Option 1)

The crushed slag shall be placed in 12-inch layers. The layers shall be so placed that when compacted they will be true to the grades or levels required with the least possible surface disturbance. Previously constructed layers shall be cleaned of loose and foreign matter by sweeping with power sweepers, power brooms, or hand brooms, as directed.

* 3.2.1.2 Other Areas of Unstable Subgrade

The crushed aggregate shall be placed on other areas of unstable subgrade, as determined by the COR. Slag shall be placed in tow 12-inch layers.

3.2.1.3 Access Road on Dike

The crushed slag shall be placed on the geotextile in one layer.

3.2.2 Grade Control

The finished and completed slag shall conform to the lines, grades, and cross sections shown or as directed by the COR. *

3.2.3 Compaction

Each layer of the crushed slag shall be compacted as specified. Speed of the roller shall be such that displacement of the aggregate does not occur. Compaction shall continue until each layer has a degree of compaction that is at least 95 percent of laboratory maximum density through the full depth of the layer. The Contractor shall make such adjustments in compacting or finishing procedures as may be directed to obtain true grades, to minimize segregation and degradation, to reduce or increase water content, and to ensure a satisfactory lift of slag. Any materials that are found to be unsatisfactory shall be removed and replaced with satisfactory material or reworked, as directed, to meet the requirements of this specification.

3.2.4 Thickness

3.2.4.1 Area of Unstable Subgrade

Compacted thickness of the aggregate course shall be 24 inches. No individual layer shall exceed *12 inches.*

3.2.4.2 Access Road on Dike

Compacted thickness of the aggregate course shall be 6 inches.

- End of Section --